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DISEASES CAUSED BY BACTERIA AND FUNGI

PATTISON, I. H., TAYLOR, J. I. & HOLMAN, H. H. (1950.) **Studies on experimental streptococcal mastitis. I. Inoculation of large numbers of *Streptococcus agalactiae* into the teat canal of goats.**—*J. comp. Path.* **60.** 71-91. [Authors' summary slightly amended.] **633**

The reactions to inoculation into the teat canal of approximately 100,000 million living *Str. agalactiae* contained in a volume of 10 ml. were a sharp systemic reaction that lasted two to three days, followed by streptococcal mastitis that was clinically, biochemically, and bacteriologically closely similar to bovine streptococcal mastitis. The reactions to inoculation into the teat canal of approximately 100,000 million heat-killed *Str. agalactiae* contained in a volume of 10 ml. were a brief systemic disturbance, slight abnormalities in the milk, and slight and transitory enlargement of the inoculated half of the udder. The reactions to inoculation into the teat canal of 10 ml. of Seitz EK filtrate of whole broth culture of *Str. agalactiae* were virtually nil.

The blood picture following inoculation of living *Str. agalactiae* was a severe neutropenia and concomitant shift to the left. The same picture was noted in lesser degree in animals inoculated with heat-killed streptococci.

A goat that was carrying haemolytic staphylococci in one side of the udder developed severe staphylococcal mastitis following inoculation of living *Str. agalactiae* into the opposite side of the udder.

Thirty-one of 83 isolations from milk of the strain of *Str. agalactiae* used for inoculation showed enhanced mouse-killing power after growth in the udder.

Sera obtained from goats nine days after inoculation with living *Str. agalactiae* gave increased mouse protection.

HOLMAN, H. H., PATTISON, I. H. & TAYLOR, J. I. (1950.) **Studies on experimental streptococcal mastitis. III. Observations on an alteration in mouse-lethal power of *Streptococcus agalactiae*, strain S13 during growth in the udder of goats.**—*J. comp. Path.* **60.** 100-107. [Authors' summary copied *verbatim*.] **634**

Individual colonies of *Str. agalactiae* strain S13 were isolated from the milk of goats after the introduction of a culture into the udder. An enhancement in the lethal effect on mice was related to rises in body temperature and to the viable count per ml. of milk at the time of isolation.

EDWARDS, S. J. (1949.) **Observations on the mode of action of sulphanilamide and penicillin on *Str. agalactiae* in milk.**—*J. comp. Path.* **59.** 191-204. **635**

Sulphanilamide in concentrations of 2-200 mg.% was bacteriostatic in fresh milk and bactericidal in milk which had been heated 10 minutes at 90°C., after a lag period of 7-12 hours. The addition of *p*-amino benzoic acid (1 : 1,000 parts of sulphanilamide) at the 12th hour to the heated milk enabled growth to continue unimpaired. Concentrations of 0·06-10·0 units of penicillin per ml. destroyed *Str. agalactiae* in 24 hours in fresh milk, where growth was delayed for 6 hours, but in milk heated to 90°C. for 10 minutes the organism was destroyed in six hours.

—MALCOLM WOODBINE.

BONADUCE, A. & BERGONIZI, M. (1949.) *Sulla* produzione dei sieri anticarbonchiosi nota IIa. Ulteriori ricerche sulle vie di elezione per l'inoculazione degli antigeni. **[Preparation of anthrax antiserum. Part II. Route of inoculation of the antigen.]**—*Clin. vet., Milano.* **72.** 41-47. **636**

In the preparation of antiserum using g. pigs and rabbits, the subcutaneous route was found to be the most dangerous and the intracutaneous-subcutaneous route the least so. For the production of precipitating antibodies the intravenous route was the only practicable one.

For protective antibodies no one route had a definite superiority.—K. SLAVIN.

WATTS, P. S. & ROBERTSON, J. (1950.) **The influence of the attested herd scheme on the local incidence and degree of tuberculosis in slaughtered cows and calves.**—*Vet. Rec.* **62.** 127-131. **637**

The incidence of TB. in cows and calves of local origin slaughtered from 1924-48 at Ayr is recorded by tables and graphs. Apart from the war years there has been a steady decrease of the disease both in the percentage infected and the extent of the disease in individual cases. This corresponds with the development of the attested herds scheme, but it is likely that there has also been some improvement in herds outside the scheme. It would appear that high milk prices limit the feeding of milk to calves and hence the amount of TB. in young stock is lowered.—K. G. TOWERS.

VERGE, J., RAOUL-DUVAL, P. & DABRIGEON, J. (1946.) Recherches sur la virulence des laits provenant de vaches atteintes de tuberculose. **[The incidence of tubercle bacilli in milk from tuberculous cows.]**—*Bull. Acad. Méd., Paris.* **130.** 384-386. **638**

An account of the results of the inoculation of g. pigs with 53 milk samples from cows with clinical TB.—W. R. BETT.

FELDMAN, W. H., HUTCHINSON, D., SCHWARTING, V. & KARLSON, A. G. (1948.) **Pathogenicity studies of tubercle bacilli, type avium, from a human infection.**—*Amer. J. Path.* **24.** 696. Discussion 697. [Only abst. given. Abst. from abst.] **639**

A case is reported of a pulmonary infection in a child aged two years, due to tubercle bacilli of avian origin. A gastric lavage specimen yielded a culture of acid-fast bacilli, unlike that of typical human type tubercle bacilli, so that extensive pathogenicity studies were done. The animals on the farm where the child lived were tested with avian type tuberculin : of 430 fowls 217 (50·4%) were positive ; of six pigs two were positive ; of 33 cattle 10 were positive. Extensive lesions were found in most of the fowls examined P.M., and cultures of avian type tubercle bacilli were obtained.—W. R. BETT.

LONG, E. R. (1950.) **The concept of resistance to tuberculosis. With special reference to the contributions of Edward R. Baldwin.**—*Amer. Rev. Tuberc.* **62.** No. 1—B, pp. 3-12. [Spanish summary. English summary copied *verbatim.*] **640**

With the most recently acquired facts before us and with the perspective of twenty years on the views of Baldwin and Krause, we may form an opinion of their contribution to the theory of resistance to tuberculosis. No fault can be found with the facts they discovered, and, although their conclusions have been contested in the light of subsequent experiments, their views have not been disproved. Baldwin's early distinction between inherent and acquired resistance is routinely taught, as in his time. Currently, emphasis has shifted from the latter to the former, and quite logically so, since an increasingly large percentage of adult chronic pulmonary tuberculosis develops from a primary lung infection. Under natural conditions, however, in this form of tuberculosis, hypersensitivity of infection, although absent at the outset when native resistance alone can play a role, is present within a few weeks, so that most of the course of the disease, whether favorable or unfavorable, is passed within the presence of hypersensitiveness. Therefore, the important facts learned by Baldwin on the relation of hypersensitivity to resistance and the defensive reaction of inflammation cannot be ignored in analyzing the pathogenesis of tuberculosis in its most characteristic forms today.

HART, P. D'ARCY & REES, R. J. W. (1950.) **Enhancing effect of cortisone on tuberculosis in the mouse.**—*Lancet.* **259.** 391-395. [Authors' summary copied *verbatim.*] **641**

Few clear-cut or reproducible instances of factors increasing the susceptibility of animals to experimental tuberculosis emerge from the many investigations. Though a number of reasons can be given for these failures, we suggest that the acutely infected experimental animal generally used may be unsuitable. For this reason a more chronic stable type of infection was sought.

Intravenous injection of 0·0006 mg. dry weight of human-type tubercle bacilli in mice produced such an infection, relatively non-progressive over 6-12 weeks, and characterised during this period by small discrete, predominantly proliferative, pulmonary lesions containing scanty tubercle bacilli. Cortisone 0·25-0·5 mg., given daily subcutaneously for 2-3 weeks during the stable period of this chronic pulmonary infection, markedly exacerbated it, with a resulting high mortality ; the voluminous lungs contained large coalescing necrotic lesions with great numbers of tubercle bacilli.

The more acute type of tuberculous infection in the mouse, produced by intravenous injection of 0·06 mg. of bacilli, was also

enhanced by cortisone 0·5 mg. daily, given from the 1st until the 9th day of infection.

The chronic-infection test has proved highly satisfactory as a method for demonstrating enhanced susceptibility to tuberculosis due to cortisone ; the acute-infection test was more difficult to interpret.

The effect of cortisone on murine tuberculosis is unlikely to be due to depression of allergy or of collagen formation.

Although human tuberculosis differs considerably from murine, and the present dosage of cortisone was relatively high, these findings should be kept in mind since tuberculosis in man may possibly be aggravated similarly.

BERGQVIST, S. & PACKALÉN, T. H. (1949.) **The effect of bacterial spreading factors on local and generalized experimental tuberculous infection.**—*Acta tuberc. scand.* **23.** 250-260. [In English. Authors' summary copied *verbatim.*] **642**

The extension of an experimentally induced local tuberculous infection in the skin of rabbits or guinea-pigs was increased by the simultaneous injection of hyaluronidase-producing bacteria (staphylococci or streptococci). There was a direct correlation between the enhancing effect of the accompanying bacteria and their capacity of producing hyaluronidase.

In many of the experiments the spreading effect was, partly at least, due to enzyme preformed in the bacterial culture. However, other experiments clearly showed that spreading of the tuberculous inflammation may be entirely due to hyaluronidase produced at the site of infection.

The generalized tuberculous infection developing in guinea-pigs simultaneously inoculated into the skin with tubercle bacilli and hyaluronidase producing staphylococci, was aggravated and accelerated proportionally to the enzyme production of the strain used.

BRESSOU, C. (1950.) La vaccination des bovins par le B.C.G. et la production laitière. **[BCG vaccination in cattle and milk production.]**—*Bull. Acad. Méd., Paris.* **134.** 294-296. **643**

BCG vaccination is unpopular among farmers in France because the sale of vaccinated animals, which react to tuberculin in the same manner as naturally infected animals, is practically impossible. There should be a regulation to have milk analogous to the "T.T." grade in England.—W. R. BETT.

USTVEDT, H. J. (1950.) **Tuberculous disease in BCG-vaccinated individuals.**—*Bull. W.H. Org.* **2.** 469-514. [Author's summary copied *verbatim.*] **644**

The question of the possible harmfulness of BCG—its power to produce, activate, or aggravate a tuberculous infection—is discussed.

Supporters and opponents of BCG vaccination have frequently lacked objectivity in their discussions of this problem which should be examined again on a strictly scientific basis. The numerous observations made in this connexion by the Joint Enterprise are analysed in this article. The various possibilities are classified under a number of headings. Some of these relate to sources of error and misunderstandings which are inevitable in large-scale campaigns and which may give rise to confusion and to prejudice against BCG vaccination. Others deal with vaccination under certain definite conditions, for example, during the preallergic phase of a tuberculous infection, in cases of latent tuberculosis or of active tuberculosis with diminished tuberculin-sensitivity, and in cases of superinfection occurring in the first weeks after vaccination.

Although no absolute proof of the harmfulness of BCG vaccination in subjects infected with tuberculosis can be given—and despite some doubtful cases which are discussed in detail—the observations made do not, as a whole, justify the conclusion that BCG vaccination has activated or aggravated the development of tuberculosis under the conditions mentioned above. However, it should be remembered that, because of possible reactions, the utmost care should be taken to avoid the vaccination of tuberculous subjects.

BØE, J. (1949.) **The possibility of a "negative phase" following B.C.G. vaccination.**—*Acta tuberc. scand.* **23.** 123-139. [In English. Author's summary modified.] **645**

Theoretical considerations and analogies with other infections might indicate a transient decrease of resistance, a negative phase, after BCG inoculation against tuberculosis. Experimental investigations seem to show that BCG vaccination of a tuberculin-positive individual does not entail any harmful effects. But such vaccination of an actively tuberculous individual may have an unfavourable effect. Clinical experiences, now very extensive, seem to show that in practice there is no increased risk if an individual in the ante-allergic stage or one who is tuberculin positive is vaccinated.

The author infected different groups of g. pigs with TB., thereafter giving them intracutaneous injections of BCG in various stages of infection and allergy. There was no harmful effect while the development of the tuberculous

process was still moderate. When the disease was far advanced, there were changes which might indicate that such vaccination had had an unfavourable influence.

ASCOLI, A. (1950.) Incongruenze e incoerenze nella vaccinazione antitubercolare. [**Inconsistent and conflicting views regarding vaccination against TB.**]—*Zooprofilassi.* **5.** 8-23. **646**

The author presents his views regarding the relative value of vaccination against TB. in cattle.

A Petragnani vaccine developed by Salvioli and consisting of chemically killed human-type bacilli is discussed, which does not appear to have been submitted to field tests.

There is some polemical discussion regarding views expressed by certain workers on immunization against TB.—G. P. MARSHALL.

VAN DEINSE, F. & SÉNÉCHAL, F. (1950.) **BCG on Sauton's medium. Effect of a long series of subcultures on the morphological and biological properties of BCG cultures.**—*Bull. W.H. Org.* **2.** 347-354. [Authors' summary copied *verbatim*.] **647**

The loss of vitality undergone by BCG cultures grown exclusively on Sauton's liquid medium is studied and the findings of the Danish workers on this point discussed. From the fourth passage onwards, the cultures grow less profusely and less rapidly and form granules instead of films on the surface of the liquid ; the size of the bacilli is reduced and their power to produce local reactions in guinea-pigs is diminished. A single passage on potato restores the vitality of the culture. The authors conclude that Sauton's liquid medium is unsuitable for the maintenance of BCG. If it is employed, it is necessary to carry out a subculture on potato after every 3 or 4 passages. At the Institut Pasteur the BCG strain is maintained by subculture on Sauton potato, and Sauton's liquid medium is used only to produce films suitable for the preparation of the vaccine.

SEIBERT, F. B. (1950.) **Comparative immunizing capacity of BCG and the proteins and polysaccharides in tubercle bacillus culture filtrates.**—*J. Immunol.* **65.** 297-310. [Author's summary copied *verbatim*.] **648**

In the presence of large inocula of tubercle bacilli previous sensitization with tuberculin protein proved no protection, and appeared possibly to be detrimental. When small inocula were used a definite increase in survival time could be demonstrated in animals previously vaccinated with BCG. In experiments in which such resistance was demonstrated, parallel series of rabbits sensitized with tuberculin protein A (soluble at its iso-electric point) as well as with the small haptenic tuberculin polysaccharide I or with the larger antigenic tuberculin polysaccharide II, did not show increased resistance to tuberculous infection. Electrophoretic changes were demonstrated in antisera to some of these fractions. Even though, by indirect methods, some of these serum components had been shown to have antibodies which possessed anti-infective properties, nevertheless, the rabbits possessing these antisera were not immune.

PREWETT, L. P. (1950.) **Johne's disease. Epidemiology and control under Victorian conditions.**—*Aust. vet. J.* **26.** 213-216. **649**

The geographical distribution of endemic Johne's disease in Victoria is described and the results of johnin testing for four years in this area are presented. Comparative tests using avian type tuberculin and johnin revealed similar reactions. It was considered that, in individual cases, the thermal test using avian type tuberculin intravenously was the most accurate used.—D. F. STEWART.

MACINDOE, R. F. H. (1950.) **What can we do about Johne's disease ?**—*Aust. vet. J.* **26.** 216-219. Discussion 219-220. **650**

A discussion of the problem of accurate diagnosis of Johne's disease, the consequent difficulties met in eradicating the disease and the prevention of its introduction by the importation of infected cattle.—D. F. STEWART.

ZBOŘIL, J. (1950.) Enzootická broncho-pneumonia oviec. [**Enzootic broncho-pneumonia in sheep.**—*Čas. československ. Vet.* **5.** 346-348. **651**

Following the importation of sheep from England in 1945 broncho-pneumonia occurred in sheep on the State farms of a Slovak district where that disease had not previously been observed. In adult animals the disease took a chronic course, with cough, discharge from nose and eyes, and gradual emaciation. In lambs the disease was more acute, the animals dying within 1-2 weeks. Lesions found P.M. were : small purulent broncho-pneumonic foci, pleurisy, pericarditis and enlarged caseous lymph nodes. Bacteriological examination does not seem to have yielded information of any value. Hampshire sheep proved particularly susceptible, and a number of cases also occurred in a herd of goats after they had been pastured temporarily with the sheep. Merino sheep were remarkably resistant. Z. claims satisfactory therapeutic results with neosalvarsan. He believes that, although no lymph nodes other than

those in the thorax seemed to be affected, the disease was diagnosed as caseous lymphadenitis. —A. MAYR-HARTING.

MURRAY, R. G. E., GILLEN, D. H. & HEAGY, F. C. (1950.) **Cytological changes in *Escherichia coli* produced by infection with phage T2.**—*J. Bact.* **59.** 603-615. [Authors' summary modified.] **652**

The succession of changes that occur in *Escherichia coli* B, in nutrient broth or synthetic medium, following infection with phage T2r or phage T2r+ have been studied by observing suitably fixed organisms stained with either Giemsa or thionine. The two staining methods complement each other.

In Giemsa preparations the first change is the appearance of "marginated" individuals in which the chromatin from each nuclear body is distributed along the adjacent cytoplasmic membrane. These are succeeded by "granular" cells in which the chromatin is irregularly distributed. The granules increase in size and density until, with T2r infection, the bacilli lyse and "ghosts" may be observed.

Following infection with T2r+, marginated and granular organisms occur as with T2r infection. Instead of lysing, most of the granular organisms change to "banded" forms in which the granules seem to coalesce, giving the appearance of thick bands of densely staining chromatin almost filling the bodies in the areas originally occupied by the nuclear bodies. The banded organisms eventually lyse.

Thionine preparations (in which cytoplasm but not the nucleus is stained) confirm the initial change described above. Subsequently, the staining capacity of the cytoplasm decreases and is almost lost at the time of lysis.

The interpretation of these observations is discussed. It is suggested that the chromatin has a cylindrical distribution in the organism during the latent period of phage infection.

CRUICKSHANK, J. C. & SMITH, H. W. (1949.) **Isolation of salmonellae from dogs, cats and pigeons.**—*Brit. med. J.* Dec. 3rd. 1254-1258. **653**

Examining the faeces of 500 dogs, 500 cats and 133 pigeons, *Salmonella* organisms were found in 1% of the dogs, 1·4% of the cats and 2·25% of the pigeons. All the types found are amongst the commonest "food-poisoning" *Salmonella*. From one cat a typical *S. paratyphi B* was isolated. These figures are comparable to those for *Salmonella* infections in rodents. The authors suggest that, in addition to these excretors, there are, as in rodents, other animals that are infected but do not excrete the bacilli. These findings have an obvious bearing for tracing the sources of infection in man.—A. MAYR-HARTING.

BOYER, J. & TISSIER. (1950.) Sur la fréquence de la transmission de la fièvre typhoide par le beurre. Nécessité d'une campagne en faveur du beurre pasteurisé. [**Transmission of *Salmonella typhi* infection through butter and the necessity of pasteurization.**]—*Pr. méd.* **58.** 634-636. **654**

Butter in the Paris vicinity is frequently contaminated with typhoid-paratyphoid organisms. Infection may originate in the farm, or, as a result of improper packing, during transport. Pasteurization and hygienic packing of butter are recommended.—W. R. BETT.

ROBERTS, E., EISENSTARK, A. & ALBERTS, J. O. (1949.) **Effect of sodium sulfamerazine on *Salmonella pullorum*.**—*J. agric. Res.* **78.** 291-294. **655**

A medium containing 200 mg. per 100 ml. of sodium sulphamerazine was markedly inhibitory to a normal strain of *S. pullorum*, but the strain could be trained to grow in this concentration if transferred from a medium containing 100 mg. per 100 ml. through successively stronger concentrations. It was then found to be more virulent in chicks than an untreated strain.—NESTA DEAN.

PRIESTLEY, F. W. (1950.) **Some observations on the diagnosis of contagious abortion in buffaloes.**—*J. R. Army vet. Cps.* **21.** 78-81. **656**

These observations are part of a larger experiment designed to compare strains 19 and 45/20 as vaccines against contagious abortion in buffaloes.

In 384 agglutination tests on sera from normal calving buffaloes the percentage of reactors fell from 23·3 in the 14 days before calving to 2·0 in the 14 days after. In 123 tests on sera from aborting buffaloes the corresponding figures were 66·7 and 29·4%. Titres of 1 : 40 or more were considered positive.

The fact that there is a positive correlation between serum titres before calving and colostrum titres suggests that the fall in serum titres after calving may be due to transference of antibody to the colostrum. Data from 11 animals indicate that the post-parturient serum titre rises as the colostrum or milk titre falls.

Examination of stained smears from cotyledons and foetal stomach contents following abortion showed that of 31 cases of positive cotyledon smears those from 15 stomachs were

negative, and of 17 positive stomach contents only one was cotyledon negative.

—E. J. H. FORD.

SOLONITSUIN, M. O. (1949.) **[Brucellosis in camels.]**—*Veterinariya, Moscow.* **26.** No. 6. pp. 16-20. **657**

It is stated that *Brucella abortus* infection in camels was first established in Russia in 1931-2. Symptoms of disease are usually absent and abortions occur in the first half of pregnancy. Infected young stock were kept under observation from birth and they yielded positive serological reactions for the first 4-5 months, and were then negative until the eighth month. Infection did not persist for more than four years. For diagnosis by skin tests S. used a product here spoken of as "brucellin," prepared from a mixture of *Br. melitensis, Br. abortus* and *Br. suis* ; and also "abortin," prepared from *Br. abortus* only. Complement fixation and agglutination tests were also used. The percentages of reactors to these tests were as follows :— in immature animals, brucellin 64·6%, abortin 60·2%, complement fixation test 84·8%, agglutination test 38·7% ; in adults 81·1%, 83·5%, 89·4% and 52·1% respectively. Removing the reactors by the use of these tests, in the course of three years a clean herd was built up, the calves having been removed fom their dams at 7-8 months old and kept separately.—F.A.A.

HOLZER, L. (1949.) Moje doterajšie skúsenosti s tlmením infekčného abortu Bang. **[Control of *Brucella abortus* infection.]**—*Čas československ. Vet.* **4.** 297-302. [English and Russian summaries.] **658**

Details are given of vaccination with strain 19 of 231 positively and 447 negatively reacting cows and calves 6-9 months old from six infected state-owned farms in Czechoslovakia. Although vaccinated cattle developed a satisfactory immunity it is stated that strain 19, when used in adult cows and bulls, may lead to focal infections in the udder or testes. The use of strain 19 should therefore be restricted to animals which have not reached sexual maturity. Healthy adults should be vaccinated only if the source of infection cannot be eliminated. It is emphasized that the vaccine should never be used in pregnant cows and breeding bulls. Vaccination of positive reactors is pointless.

H. states that titres of vaccinated cows and calves were positive for 2-4 months. [Author's standard for a positive titre is not stated.] Killed vaccine was not effective in the control of the infection.—E.G.

GILMAN, H. L. (1950.) **The control of brucellosis in animals employing test and slaughter methods.**—Washington : American Association for the Advancement of Science. Brucellosis : A Symposium. pp. 236-240. **659**

The method of brucellosis eradication to be used in a herd of cattle must be suited to the individual herd. The plan may be calf vaccination, blood test and slaughter, blood test and gradual elimination or a combination of the three, depending upon factors such as the size of the herd, the percentage of reactors, the financial circumstances of the owner, whether the disease is rapidly spreading and whether replacements must be purchased. The fact that widespread test and slaughter failed to control brucellosis where it succeeded for tuberculosis is due primarily to the difference in the incubation period of the two diseases. Because of the shorter incubation period in brucellosis animals may not be detected by the blood test before they spread the infection. Test and elimination must involve careful handling of reactors and their gradual replacement by young stock preferably raised in the herd, sanitation and segregation at parturition and re-test of all animals every 30 days.

With swine brucellosis it is recommended that the entire herd be sold for slaughter as soon as possible. All equipment and premises should be thoroughly disinfected and replacements should come from brucellosis-free herds. In breeding herds it is necessary to employ the less drastic measure of segregation and eventual slaughter of the infected herd.

The few outbreaks of brucellosis in goats in the U.S.A. have been stamped out by slaughter of all infected animals. Brucellosis in sheep in the U.S.A. is rare or non-existent.

—L. M. JONES.

I. SIMMS, B. T. (1950.) **Federal aspects of the control of brucellosis.** — Washington : American Association for the Advancement of Science. Brucellosis : A Symposium. pp. 241-246. **660**

II. GWATKIN, R. & PEART, A. F. W. (1950.) **Brucellosis in Canada.**—*Ibid.* pp. 209-219. **661**

I. The Bureau of Animal Industry of the U.S. Department of Agriculture has considered bovine brucellosis a disease which can be eradicated. The control and eradication programme is one of co-operation between the federal and the individual state governments. An increasing number of cattle are tested each year and the percentage of reactors has been found to be decreasing. During the fiscal year

ending June 30, 1949, more than five and a half million female cattle of testing age from half a million herds were tested. About 16% of the herds contained reactors to the blood test, 4% of the cattle tested being reactors. It is believed that not more than 25% of the heifer calves are vaccinated each year. Vaccination of heifers is recommended on all farms that harbour infected cattle, on all farms in heavily infected areas and on brucellosis-free farms which may sell stock to infected herds. Elimination of reactors from all herds is the only method of accomplishing complete eradication.

II. The percentage of infection with brucellosis in cattle in Canada is not known as a large proportion of the cattle population has not been officially tested. Under the Dominion's Brucellosis-Free Listed Herd Plan a herd is accepted after three negative tests at intervals of three months. Reactors are branded and may be sold only for slaughter or to infected herds. Vaccination with strain 19 is permitted in herds under the plan. The brucellosis testing policies, vaccination methods and import regulations of the provinces are given in some detail.

On the basis of the serum agglutination test the incidence of brucellosis in pigs appears to be low. There has been no report of the isolation of *Br. suis* in Canada. Serum agglutinins have been detected in the sera of bison and elk but not of deer. Because of the difficulties in diagnosing brucellosis in human beings it is not known whether the increasing number of reported cases indicates an increased incidence or better recognition of the disease over a period of years. The number of cases per 100,000 population in Canada was 1·7 in 1937 and 3·0 in 1947.—L. M. Jones.

McDiarmid, A. (1950.) **A comparison of the immunity produced in cattle by the inoculation of *Br. abortus* strain 19 intradermally intracaudally and subcutaneously.**—*Vet. Rec.* 62. 361-364. 662

Forty-two Ayrshire heifers, 15-18 months old, reared in a *Brucella abortus* free herd and negative to the agglutination test on two occasions were used. Three groups of ten animals each were inoculated with Weybridge S19 vaccine as follows : (1) 5 ml. subcutaneously behind the elbow, (2) 0·2 ml. intradermally in the same area, (3) 1·0 ml. subcutaneously about half an inch from the tip of the tail. The remaining 12 animals were unvaccinated controls. Service of all groups commenced at the first oestrus after vaccination and when the majority of the animals were about five months pregnant artificial infection was carried out. This consisted of the instillation into the conjunctival sac of each animal of about 150 million *Br. abortus* organisms of strain 544.

Monthly agglutination tests were carried out and following parturition cultural and biological examinations were made of cotyledons, colostrum, foetal stomach contents and milk samples. In the control group all 12 animals became infected and ten calves were born dead. In the subcutaneous group one out of eight animals became infected and two dead calves were born, one following dystocia at 280 days. In the intradermal group one out of ten animals became infected and one calf was born dead. In the intracaudal group two out of ten animals were infected and three calves were born dead, one following dystocia at 280 days.

It is concluded that small amounts of vaccine administered intradermally or intracaudally are as effective as the standard 5 ml. subcutaneous dose.—E. J. H. Ford.

McVay, L. V., Guthrie, F., Michelson, I. D. & Sprunt, D. H. (1950.) **The isolation of Brucella organisms from apparently healthy individuals.**—*Yale J. Biol. Med.* 22. 661-673. [Authors' summary copied *verbatim.*] .663

Two hundred and fifty surgical and necropsy specimens [from human beings—Ed. *V.B.*] were examined bacteriologically for brucella. Brucella were obtained in six cases. Eighty-two prostates were cultured. *Br. abortus* was isolated in two cases and *Br. melitensis* in an additional two instances. Ninety-three fallopian tubes were cultured. From two of these, *Br. melitensis* was obtained. Seventy-five autopsy specimens were similarly studied with negative results. All of the positive surgical specimens showed gross and microscopic evidence of chronic inflammation. Eosinophilic leukocytes were prominent in the positive specimens. All of the patients from whom the positive specimens were obtained gave a clinical history compatible with brucellosis. In none of the six positive cases could specific agglutinins for brucella be demonstrated in the patient's serum. In all six cases intradermal brucella antigens gave positive reactions.

Pacheco, G. & de Mello, M. T. (1950.) **A urease test for the differentiation of *Brucella suis*.**—*J. Bact.* 59. 689-691. 664

In both Ferguson & Hook's and Christensen's media the red colour reaction characteristic for urease activity was obtained much

more rapidly with *Br. suis* than with other *Brucella* species.—A. MAYR-HARTING.

KHAMENEVER, L. M. (1947.) **[The epidemiology of tularaemia in post-revolutionary Russia.]**—*Zh. Mikrobiol., Moscow.* No. 11. pp. 76-80. 665

In 1877 a disease in human beings occurred in the Volga delta and was regarded at the time as a mild form of bubonic plague. Retrospective analyses of its whole aetiology and clinical features have suggested that the disease was in reality tularaemia. The reservoir of infection was found to be the water vole, *Microtus* (*Arvicola*) *amphibius*, and the vector probably the *Aedes* mosquito. In the various outbreaks since then it has been found that the common house mouse and the field vole, *M. arvalis* [*agrestis*], were responsible for its spread. Research on the disease in Russia began in 1926 when *Br. tularensis* was isolated from a member of the staff of the Astrakhan bubonic plague laboratory. In 1929 the first special tularaemia research laboratory was established and there are now 11 institutes with several smaller laboratories in addition. A live vaccine was prepared, which conferred immunity on g. pigs and mice ten days after injection.—F.A.A.

NÉLIS, P., DETROUX, P., LAFONTAINE, A. & LEGROS, G. (1950.) Premiers cas de tularémie humaine en Belgique. **[Human tularaemia in Belgium.]**—*Bull. Acad. Méd., Paris.* 134. 260-262. 666

The first seven cases of tularaemia in human beings in Belgium are reported and compared with cases observed in France. In one case a rabbit caused the infection ; in the remainder a hare. The use of chloromycetin or of aureomycin for treatment is advised.

—W. R. BETT.

MASSIDDA, A. (1948.) Vaccinazione antibrucellare del bestiame con germi vivi in eccipiente grasso. **[Immunization of goats against brucellosis with live vaccine dispersed in vaseline-lanolin medium (Dubos).]**—*Nuova Vet.* 24. 407-410. 667

Tests of a live brucella vaccine, in which the organisms of Huddleson's strain 805 were suspended in a lanolin-vaseline medium, were made on a flock of goats in which the abortion rate was high but below 50%, all the adults being positive to a brucellin test, the kids being, however, negative or doubtful. Shortly after preparation the vaccine was inoculated subcutaneously into the tail or side of the neck. During the three years of the experiment the abortion rate in animals inoculated as young kids was less than 5% ; in older animals already infected at the time of inoculation it was less than 20%. In unvaccinated control animals the abortion rate was higher.—R. MACGREGOR.

SPINK, W. W., HALL, W. H., SHAFFER, J. & BRAUDE, A. I. (1949.) **Treatment of brucellosis with streptomycin and a sulphonamide drug.**—*J. Amer. med. Ass.* 139. 352-356. [Authors' summary copied *verbatim.*] 668

The simultaneous administration of streptomycin and a sulfonamide, especially sulfadiazine, has been utilized in the treatment of 23 patients with brucellosis over a period of fourteen months. It is recommended that 0·5 gm. of streptomycin should be injected intramuscularly every six hours for a total of 28 gm. given in fourteen days. At the same time that treatment with streptomycin is begun, an initial dose of 3 to 4 gm. of sulfadiazine is given orally and then 1 gm. every four hours for at least fourteen days. One of the doses of sulfadiazine may be omitted routinely during the night.

The foregoing type of combined therapy has been followed by a relatively low number of relapses ; toxic reactions to either drug have not been serious, and the appearance of streptomycin-resistant Brucella has not occurred. While combined therapy has proved effective in the febrile and bacteremic patient, with and without complications, its effectiveness in the obscure and indolent forms of chronic brucellosis require further investigation.

RALSTON, R. J. & PAYNE, E. H. (1950.) **Treatment of chronic brucellosis with chloramphenicol and aureomycin.**—*J. Amer. med. Ass.* 142. 159-161. [Authors' summary copied *verbatim.*] 669

Forty patients believed to have chronic brucellosis were treated with chloramphenicol (chloromycetin) and were observed for three to eight months. Partial to complete relief of symptoms was obtained in 35 (87·5 per cent.). Two of the 5 failures may be explained by erroneous diagnosis. Three relapses have occurred since the initial follow-up period. Partial to complete relief was obtained in 4 patients treated with aureomycin hydrochloride, with maintenance of improvement through follow-up periods of three to nine months. Inability of 1 patient to complete the course of treatment may explain the least satisfactory result. Side effects were less troublesome from chloramphenicol than from aureomycin.

ELBERG, S. S. & SILVERMAN, S. J. (1950.) **Immunology of brucellosis.**—Washington :

American Association for the Advancement of Science. "Brucellosis. A Symposium" pp. 62-82. **670**

Numerous reports concerning *Brucella* infection in various species suggest that contact with *Brucella* or their products does not produce a strong or lasting immunity although it may confer an increased capacity to restrain the progress of the infection. Acquired resistance to brucellosis in experimental animals was discussed from the point of view of the specific manifestations of such resistance. In vaccinated animals it has been shown that the multiplication of *Brucella* may be checked in the spleen, the liver and spleen may be rapidly cleared of organisms and the infection may be held in the regional lymph nodes. Although the serum of resistant individuals may have bactericidal activity the titre of serum antibodies seems to bear little correlation with the ability of that individual to withstand exposure to a virulent strain of *Brucella*.

The authors studied the serological behaviour of the undegraded antigens of the three species of *Brucella* with their homologous and heterologous sera. Their data could not be interpreted in terms of present concepts of the antigenic structure and colonial morphology of the three species. The suggestion was made that *Br. suis* may be related to *Br. abortus* and *Br. melitensis* primarily through rough type antigens. When soluble antigens are used as immunizing agents the specificity of a preparation for a given host must be considered. Fractions which give significant protection in one species may be ineffective in another species. Dosage, mode of immunization and use of adjuvants must be studied before the efficacy of purified preparations as vaccines for larger animals will be known. Preliminary results of several investigators with adjuvant vaccine mixtures suggest that intracellular parasitism by a living vaccine may not be a prerequisite to acquired resistance to *Brucella* infection. Hypersensitivity to *Brucella* protein accompanies re-infection but the role of this phenomenon in acquired immunity requires careful re-examination.—L. M. Jones.

Braun, W. (1950.) **Variation in the genus *Brucella*.**—Washington: American Association for the Advancement of Science. Brucellosis. A Symposium. pp. 26-36. **671**

Studies on variation in the genus *Brucella* have shown that the establishment of variant types in originally pure cultures is due to the spontaneous, undirected appearance of variants or mutants. The subsequent establishment of these variants within growing populations is dependent upon inherent factors such as growth rate and viability as well as upon a variety of environmental factors which affect growth conditions. Normal serum from species susceptible to *Brucella* infection is capable of suppressing the establishment of non-smooth types in broth cultures without affecting the growth of the smooth type. This selective serum (S.S.) factor could not be demonstrated in sera from species with relative insusceptibility to *Brucella* infections nor could it be detected in serum from infected or vaccinated animals of susceptible species. These observations were substantiated by *in vivo* studies. Analysis of the chemical nature of the S.S. factor and identification of compounds which counteract its effect have been carried out in an attempt to elucidate the mechanisms of the selective effect.

The studies reviewed in this paper have contributed greatly to knowledge of how to control and produce population changes among bacteria. They have indicated one of the possible mechanisms for host resistance and susceptibility and this has led to the development of a sensitive diagnostic test based upon activity of the S.S. factor. The suggestion was made that *in vivo* inactivation of the S.S. factor might provide a new therapeutic method.

—L. M. Jones.

Ainsworth, G. C. (1950.) **Fungus diseases of animals.**—*Nature, Lond.* **166.** 547-549. **672**

A meeting of the British Mycological Society. The programme included papers on moniliasis in turkeys by Blaxland, and on the isolation of *Candida albicans* by Stockdale. Rewell discussed aspergillosis of birds and other animals, caused by *Aspergillus fumigatus* and less frequently by other species. Bullen dealt with *Histoplasma farciminosum*, the cause of epizootic lymphangitis in equines, and Duncan reviewed the relation of mycoses of animals to disease in man, mentioning *Histoplasma capsulatum* as an example.—W. R. Bett.

Scheff, G. J. & Pfeifer-Scheff, I. M. (1950.) **The cellular and immunological reactions in rabbits infected with *Histoplasma capsulatum*.**—*Amer. Rev. Tuberc.* **62.** 374-389. [Spanish summary. English summary copied *verbatim*.] **673**

In rabbits inoculated with the mycelial form of *H. capsulatum* a generalized, chronic infection was induced, while in those animals inoculated with the yeast form a more severe, acute infection resulted. In both instances a transitory stimulation of the monocytic cell series followed in either the blood or the

omentum and peritoneal fluid, depending on the site of inoculation. In the animals that died during the infection spontaneously, the presence of the yeast organisms could be demonstrated.

In the animals with a generalized infection, skin sensitivity of apparently lasting duration developed within ten to seventy-eight days. The complement fixation test in these animals also became positive after twenty-one days and remained so in the surviving 2 or 5 animals until the experiment was terminated 206 days after inoculation.

PARVIS, D. & CEPPELLINI, R. (1948.) Azione del filtrato di *Aspergillus fumigatus* sull'acido-resistenza dei *B. paratubercolari* e *tubercolari*. [**Effect of *Aspergillus fumigatus* filtrate on the acid fastness of *Mycobacterium tuberculosis* and *M. johnei*.**]—*G. Batt. Immun.* **39.** 1-10. [English, French and German summaries. Abst. from English summary.] **674**

The authors could not confirm the inhibitory action on acid fastness produced by *Aspergillus fumigatus* filtrates on *Mycobact. tuberculosis* and *M. johnei* reported by other workers.—G. V. LAUGIER.

GORET, P. & JOUBERT, L. (1949.) Contribution à l'étude de l'actinomycose du chien. [**Canine actinomycosis.**]—*Rev. Méd. vét., Lyon et Toulouse.* **100.** 561-568. **675**

Details are given of the characters of an organism considered to belong to the family Actinomycetaceae isolated from the lesions in a three-month old dog with generalized actinomycosis. There were lesions in the liver, spleen, epicardium, kidneys, tracheo-bronchial lymph nodes and lateral ventricles. The macroscopic features resembled those found in canine TB. The serous cavities were not involved.

Two different types of colony occurred on solid media—small, flat, white, radially striated colonies and large, yellowish, sponge-like colonies which extended deeply and irregularly into the underlying medium. Both types of colony were grown separately in serial culture and the authors consider that they represented dissociation of the organism and not the presence of two separate species.

—E. G. WHITE.

MUSAEV, M. A. (1949.) [**Leptospirosis in pigs.**[—*Veterinariya, Moscow.* **26.** No. 8. pp. 23-25. **676**

In 1948 two outbreaks of leptospirosis among pigs [species of leptospira not stated] occurred on a farm and spread to both cattle and horses. Shortly before the first outbreak 20 sows were imported and eight of them reacted to serological tests for leptospirosis.

All the farm livestock drank and wallowed in a pond nearby and the same strain of leptospira was isolated from the water and, also, from the kidneys of local rats. A diagram of the probable routes of infection is given.

—F.A.A.

FLORIO, R. (1950.) Les spirochétoses canines : leur transmission à l'homme. [**Canine leptospiroses and their transmission to man.**]—*Cah. Méd. vét.* **19.** 1-13. **677**

This is a general description of leptospirosis as it occurs in the dog, including the clinical features of the various types of infection, and a short description of the infection in man. No new knowledge.—I. W. JENNINGS.

WIRTH, D. (1949.) Leptospirosen. [**Leptospiroses.**]—*Wien. tierärztl. Mschr.* **36.** 353-360. **678**

This is a general account of the subject, with particular reference to canine infection.

In Central Europe, a uraemic form (Stuttgart disease ; canine typhus) caused by *L. canicola* and an icteric form (infectious canine jaundice) caused by *L. icterohaemorrhagiae* occur. The dog appears to be the reservoir of the former organism, which can sometimes be found in the urine of healthy animals. Infection is believed to occur by water contaminated with dog urine. There is a high incidence among rats and mice in Vienna, of *L. icterohaemorrhagiae* infection, the organisms being found in the kidney (35·5% of rats and 16·7% of mice out of 200 examined microscopically).

During the last 20 years W. has found that 80–90% of cases of *L. canicola* infection occurred in male dogs. The danger of human infection from dogs is considered slight. The few cases recorded of *L. canicola* infection have been mild and non-icteric. Infection of man with *L. icterohaemorrhagiae* from the dog has not been established with certainty.

Leptospirosis occurs as a serious infection on fox farms and is also said to affect wolves. It is possible that the cat may become infected —this statement is based on the occurrence of icterus in a cat and its kittens on a fox farm where an outbreak of leptospirosis occurred.

Leptospirosis in pigs and cattle is referred to very briefly.—E. G. WHITE.

NEFED'EV, A. I. (1949.) [**Bovine leptospiral vaccine.**]—*Veterinariya, Moscow.* **26.** No. 8. pp. 25-26. **679**

An outbreak of leptospira infection [species not stated] among cattle and sheep occurred in some regions of the U.S.S.R. in 1948. Com-

mencing with a few cases in January, the incidence of infection, as usual, reached its climax in summer and, wherever it was not controlled, persisted into the winter. Sometime previously Lyubashenko had prepared a leptospiral vaccine [composition not stated] and 43 batches of it were widely tested. Clinically healthy cattle among infected herds were injected with two doses at a 7-8 day interval, adults receiving 10-15 ml. and calves 5-10 ml. After the first injection only 22 out of 5,972 animals developed leptospira infection ; the illness in these animals developed from the second to the fourth day and was not severe. After the second injection none became affected. This vaccine was then used on tens of thousands of cattle and sheep in various parts of the U.S.S.R. with good results.—F.A.A.

MITCHELL, P. & MOYLE, J. (1950.) **Occurrence of a phosphoric ester in certain bacteria : its relation to Gram staining and penicillin sensitivity.**—*Nature, Lond.* **166.** 218-220. **680**

Cultures from 16 Gram-negative and Gram-positive bacteria indicated no correlation between Gram staining and the ratio of ribonucleic acid to desoxy-ribonucleic acid. The presence of an unidentified phosphoric ester was closely correlated with Gram-positive staining, and also with sensitivity to gentian violet and to penicillin. In the presence of penicillin the ester content of a culture of *Micrococcus pyogenes* var *aureus* decreased rapidly and the Gram-positive reaction of the bacteria diminished.—P. H. HERBERT.

ELLIOTT, S. D. (1950.) **The crystallization and serological differentiation of a streptococcal proteinase and its precursor.**—*J. exp. Med.* **92.** 201-218. [Author's summary copied *verbatim*.] **681**

Grown in dialysate broth at a pH between 5·5 and 6·5, some strains of group A streptococci elaborate the precursor of a proteolytic enzyme. Within this range of hydrogen concentration the precursor is also produced when the streptococci are suspended in a peptone dialysate containing glucose and incubated at 37°C. The precursor does not appear to be produced at a neutral or alkaline reaction. Methods are described whereby the precursor and proteinase have been isolated in crystalline form. The precursor crystallizes from half-saturated ammonium sulfate at pH 8·0 and a temperature of 22°C. or higher ; the proteinase crystallizes from 0·15 saturated ammonium sulfate at pH 8·0 but does so most readily at refrigerator temperature. The degree of purification achieved by these procedures is discussed. The activity of purified preparations of the precursor and of proteinase has been tested against α-benzoyl-*l*-arginineamide and, with this as a substrate, the conversion of precursor to proteinase by autocatalysis or by trypsin has been confirmed. Immunological experiments are described, the results of which provide evidence of the distinct specificity of the precursor and proteinase ; the conversion of precursor to proteinase has been followed by means of serological tests.

See also abstr. **752** (tetanus toxin and antitoxin); **787** (*Staph. aureus* and control of fowl sarcoma); **822** (udolac in mastitis); **829** (agglutination of bacteria by streptomycin); **832** (penicillin); **833** (neomycin); **844** (bacteria in dust); **857** (*Myobact phlei, Pseudomonas*); **888** (acid-fast bacilli in faeces); **898** (report, Medical Research Council); **899** (report, S. Africa); **900** (report, Cyprus); **901** (report, U.S.A.); **902** (report, Sweden); **903** (book, bacteriology); **904** (book, infectious diseases); **905** (book, veterinary medicine).

DISEASES CAUSED BY PROTOZOAN PARASITES

PIEKARSKI, G. (1949.) Blepharoplast und Trypaflavinwirkung bei Trypanosoma brucei. **[The influence of trypaflavine on the blepharoplast of *T. brucei*.]**—*Zbl. Bakt. I. (Orig.)* **153.** 109-115. **682**

A strain of *T. brucei* became resistant to trypaflavine after 15 passages, averaging three days in length, through mice which had been given doses ranging from 0·5 ml. 1 : 10,000 to 0·2 ml. 1 : 25,000 trypaflavine. Cytological examination then showed that no blepharoplast was detectable with Feulgen stain. After eight months' growth in the absence of the drug, resistance had almost entirely disappeared. The blepharoplast was still not visible. These changes did not affect the virulence of the strain.—NESTA DEAN.

GOBLE, F. C. (1950.) **Chemotherapy of experimental trypanosomiasis. I. Trypanocidal activity of certain bis (2-methyl-4-amino-6-quinolyl) amides and ethers.**—*J. Pharmacol.* **98.** 49-61. **683**

As a class these compounds are trypanocidal ; the variations being a function of their chemical structure. Those compounds in which the bridge (between the two quinoline components) is not a branched chain are the most active against *T. brucei* but inactive with *T. cruzi*. The branched chain compounds are more active against *T. cruzi*—increasingly so with length of the alkyl chain. The most activity is where one branch is propyl or allyl and the other contains three or more C atoms—but these compounds have no activity against

T. brucei. The ratio of hydrogen in the branched chains is also important.

No compound has appreciable activity against *T. congolense* or *L. donovani*. There was slight activity against *T. lewisi* and *T. duttoni*.—MALCOLM WOODBINE.

BROWNING, C. H. (1949.) **Chemotherapy of *T. congolense* infections with phenanthridine compounds: biological aspects.**—*Nature, Lond.* **163.** 590-591. **684**

Recent studies on the therapeutic sensitivity of *Trypanosoma congolense* and some other trypanosome species with the phenanthridine compounds (mainly No. 1553 or "dimidium bromide" and No. 897) were discussed. In mice, a relationship exists between the biological phases of *T. congolense*, according to the duration of infection, and the degree of therapeutic sensitivenesss. The parasites are most susceptible to treatment when they become abundant in the blood *i.e.* at acme, but before and after the acme phase there is a diminished therapeutic response. B. suggested that immunity, following the destruction *in vivo* of *T. congolense*, largely contributes to the sterilization of the infection. Various "acme" strains of *T. congolense*, obtained by prolonged acme passage through mice until the infection became accommodated and derived originally from different natural sources, have marked differences in virulence, susceptibility to the chemotherapeutic drug and "solidity" of immunity. B. was unable to produce a drug-fast strain of *T. congolense*. Toxic symptoms resembling photosensitization were not observed in the small rodent host. In mice the ratio of the maximum tolerated dose to the minimum curative dose of No. 1553 is 400 : 1 to 40 : 1 when injected subcutaneously at acme. With No. 897 the ratio is 100 : 1 to 10 : 1. Similarly the superiority of No. 1553 over No. 897 is also manifest in cattle; the "therapeutic index" is, however, much lower. The prophylactic action of No. 1553 and No. 897 appears to be of much shorter duration in mice then in cattle.

T. vivax infections in cattle respond to the phenanthridine compounds which are effective against *T. congolense*; no member of the series is potent against *T. brucei*. *T. cruzi* infection in mice is influenced by certain members of the series especially 3-carbethoxyamino-9-*p*-carbethoxyaminophenyl-10 methylphenanthridinium chloride (or methanesulphonate) and also by 2 : 7-dicarbethoxyamino-9 : 10-dimethylphenanthridinium methosulphate, neither of which acts on *T. congolense* or *T. brucei* except in maximal doses.—FERGUS S. MCCULLOUGH.

SCHOENAERS, F. (1950.) Premiers résultats d'un essai de chimiothérapie des trypanosomiases bovines à *Trypanosoma congolense* et *Trypanosoma vivax* par l'antrycide. **[Chemotherapy of *Trypanosoma congolense* and *T. vivax* infection in cattle with antrycide.]**—*Ann. Soc. belge Méd. trop.* **30.** 65-68. **685**

A 10% solution of antrycide dimethyl sulphate in sterile water was administered subcutaneously at a dose rate of 5 mg. per kg. In 13 cases of *T. congolense* infection, the parasites disappeared in 6-8 hours and remained absent for six weeks. A moderate local reaction followed administration. In the seven cases of *T. vivax* infection, the parasites disappeared 48 hours after injection. Antrycide is a very active agent for *T. congolense* infection but judgement was reserved in the case of *T. vivax*.

—MALCOLM WOODBINE.

DEOM, J. (1950.) Chimioprophylaxie des trypanosomiases bovines à *T. congolense* et *T. vivax* par le phenanthridinium S.1553. **[Prophylaxis of bovine trypanosomiasis with phenanthridinium 1553 (dimidium bromide).]**—*Ann. Soc. belge Méd. trop.* **30.** 25-29. **686**

Solutions of dimidium bromide prepared by warming 1% concentrations in sterile distilled water at 80°-85°C. did not deteriorate over six months. Intramuscular doses of 1 mg. per kg., given 5 min. to 28 days before infection, gave complete protection in 12 cases of *Trypanosoma congolense* infection, 11 of *T. vivax* and two of both. *T. theileri* did not respond to dimidium bromide.—MALCOLM WOODBINE.

STURA, C. A. (1948.) Métodos directos de laboratorio aplicados al diagnóstico diferencial y pronóstico de mal de caderas. **[Laboratory methods for diagnosis of mal de caderas.]**—*Gac. vet., B. Aires.* **10.** 120-139; 156-170; 214-232. **687**

The peripheral blood can be examined in thin smears or decolorized thick films, and, in doubtful cases, 10 ml. can be mixed with 20% sodium citrate and centrifuged, and the supernatant fluid examined for trypanosomes. The blood picture shows oligocytaemia with a corresponding influx of normoblasts and reticulocytes. The red cells lake easily, and this is responsible for the icterus usually present. Trypanosomes may also be found by puncturing the lymph nodes, which are tumified and painful, or by puncturing the spleen. Puncture of bone and examination of the red marrow gives a picture corresponding to that of the blood.

Inoculation of g. pigs, rabbits and dogs can be used for confirmation of diagnosis.

—R. MACGREGOR.

MITSCHERLICH, E. & SAEUBERLICH, G. (1950.) Ergebnisse bei der Serodiagnose der Beschälseuche. **[Serological tests for diagnosis of dourine.]**—*Mh. Vet.-med.* **5.** 189-194. **688**

Comparative studies on the use of complement fixation, agglomeration and formol-gel formation tests in the diagnosis of dourine in horses were carried out. Although the complement fixation test is not specific as to the type of trypanosomiasis, it may be safely used in Germany, where *Trypanosoma* infections other than dourine do not occur. Because of the fluctuation in the antibody content of sera from infected animals, a horse is regarded as not infected only when three consecutive tests at intervals of 3-4 weeks are negative. The agglomeration test may be used in addition to the complement-fixation test or as a preliminary in mass-examination. Positive or doubtful reactions should, however, be verified by complement-fixation. The formol-gel formation test is not specific.—E.G.

HOARE, C. A. (1950.) **Races of *Trypanosoma evansi* produced by mutation.**—*Trans. R. Soc. trop. Med. Hyg.* **43.** 360-362. **689**

Individuals lacking the characteristic kinetoplast are especially common in *T. evansi*, their proportion varying from 0·01-10%. In addition to individual variation, totally and permanently akinetoplastic strains can be produced by treating infected animals with certain organic dyestuffs. Cases are also instanced of strains of *T. evansi* maintained in mice and naturally transmitted in camels which spontaneously and permanently lost the kinetoplast. Loss of the kinetoplast thus represents a heritable variation having the characters of a mutation.

Since *T. equinum* is indistinguishable from *T. evansi* except in the absence of a kinetoplast, it is concluded that this species originated as an akinetoplastic mutation of *T. evansi* which established itself in the New World.

—L. P. JOYNER.

YUTUC, L. M. & SHER, H. (1949.) **Observations on the distribution of *Trypanosoma evansi* in the bodies of rats and guinea pigs during different stages of infection.**—*Philipp. J. Sci.* **78.** 155-165. [Abst. from authors' summary and conclusions.] **690**

During the prepatent period in rats the organisms were scarce in the internal organs such as the bone marrow, brain, heart, kidneys, liver, lungs, spleen and lymph nodes. No indication tending to suggest that the organisms multiply and accumulate in considerable number in the organs examined during the initial period was found. During the patent period there seeemed to be a direct relationship between the density of the trypanosomes in the peripheral blood and in the heart, liver, lungs, and kidneys. In the spleen, brain, bone marrow and lymph nodes, the distribution intensity was lower than in the peripheral blood. While bleeding had little or no effect on the distribution of the organisms in the liver, heart, lungs and kidneys, a significant decrease in the bone marrow, brain and spleen was recorded. During the subpatent period in g. pigs the brain, lymph nodes and the spinal cord which had light trypanosome burdens during the patent period, presented a comparatively heavier trypanosome density. The resistance of the animal to the infection may possibly be the factor responsible for this finding. The statement that the organisms are evenly distributed in the different organs of the body was not sustained and that the multiplication of the trypanosome takes place in the body fluids seems justified.

MORNET, P. & MAHOU, R. (1949.) Essai de traitement de la trypanosomiase expérimentale bovine et équine à *T. vivax-cazalboui* par le bromure et le chlorure de dimidium corps 1553. **[Treatment of experimental *T. vivax-cazalboui* infection in cattle and horses with phenanthridinium compounds 897 and 1553.]**—*Bull Soc. Path. exot.* **42.** 355-359. **691**

A single subcutaneous dose of phenanthridinium chloride (2 mg. per kg. in cattle ; 1 mg. per kg. in horses) is completely effective. The chloride is more soluble and cheaper than the bromide.—NESTA DEAN.

FIENNES, R. N. T.-W. (1948.) **Treatment experiments with *Trypanosoma vivax* (Ziemann) disease of cattle.**—*Vet. Rec.* **60.** 392-393. **692**

The trypanocidal effect of certain drugs was tested against a fulminating strain of *Trypanosoma vivax* in cattle. There was no evidence that Bayer 7602 had any effect on the course of the disease. Both stibophen (sodium antimony-bispyrocatechol-3, 5-sodium disulphonate) and phenanthridinium 897 diverted the disease from a fatal to a benign course but did not eliminate the parasites. Phenanthridinium 897 was regarded as the drug of choice.

—S. BRIAN KENDALL.

GARNER, R. J. (1950.) **The toxicity of antrycide dimethosulphate.**—*Vet. Rec.* **62.** 314-315. **693**

Serious toxicity was observed in young

cattle following antrycide dimethosulphate therapy at a dose rate of 5 mg. per kg. Two hours after treatment all animals were off food and dull in appearance and in some of them excessive salivation, spasm of the diaphragm, repeated defaecation, pyrexia and general muscular trembling was observed. Symptoms declined in severity after four hours and all animals had recovered 36 hours after the injection.

Toxicity was demonstrated in other cattle ; three animals died following therapy at the rate of 7·5 mg. per kg. and in two other laboratory animals symptoms developed of such severity that the animals were killed.

Experimental evidence indicated that large doses of antrycide are needed to cure *T. vivax* infection in cattle and that such doses are likely to produce severe reactions if not death.

—S. Brian Kendall.

Kessel, J. F. & Thompson, C. F. (1950.) **Survival of *Trichomonas vaginalis* in vaginal discharge.**—*Proc. Soc. Exp. Biol., N.Y.* **74.** 755-758. [Authors' summary copied *verbatim.*] **694**

The survival of *Trichomonas vaginalis* was determined by studying discharge from 50 untreated patients with vaginal trichomoniasis. Droplets of the discharge were placed on the enamel surface of wooden blocks and tested under natural conditions of drying at room temperature.

Tests at intervals ranging from 10 minutes to 7 hours were made by comparing the activity of the flagellates in direct microscopic examination with their ability to multiply in serial cultures. A close correlation was observed between the two procedures. The trichomonads survived in 100% of the tests at 45 min., in 96% at 1 hour, in 56% at 3 hours and in 4% at 6 hours. No survival was demonstrated at 7 hours.

These data, together with experimental and epidemiologic reports of other workers indicate that fomites contaminated with *Trichomonas vaginalis* may, under natural conditions, act as agents in the transmission of vaginal trichomoniasis.

McVay, L. V., Laird, R. L., Flanagan, J. B. & Sprunt, D. H. (1949.) **The treatment of *Trichomonas vaginalis* vaginitis with aureomycin.**—*Proc. Soc. exp. Biol., N.Y.* **72.** 674-675. **695**

Following the finding that aureomycin possessed trichomonacidal properties *in vitro*, the successful treatment of *Tr. vaginalis* infections in women by vaginal insufflation of this antibiotic is recorded. As controls, six patients were treated with talc powder alone with negative results. 2 g. of aureomycin daily by mouth for seven days was similarly ineffective. In every case diagnosis was established by the demonstration of the organism microscopically in wet preparations. 54 cases were treated by vaginal insufflation of a mixture of 500 mg. aureomycin and 2 g. powdered talc administered at intervals of one or two days. Four, or in the case of 12 pregnant patients six, applications were made. The treatment of the non-pregnant cases was concluded by the insertion of 250 mg. gelatin capsules of aureomycin on alternate nights for the next two weeks, but in the case of the pregnant patients this application was made nightly. The pregnant cases were thus subjected to more intensive treatment since it is stated that the infection is more stubborn to any form of therapy during pregnancy.

Symptoms and parasites disappeared but relapses or re-infection were observed in six cases (three pregnant and three non-pregnant). Successful subsequent treatments are recorded. No significant toxic reactions were observed.

—L. P. Joyner.

Sautter, J. H., Pomeroy, B. S. & Roepke, M. H. (1950) **Histomoniasis (enterohepatitis) in turkeys. I. A procedure for the screening and testing of drugs. II. Chemotherapy of experimental histomoniasis.**—*Amer. J. vet. Res.* **11.** 115-119 ; 120-129. **696**

I. This paper describes a technique for the transmission of *Histomonas meleagridis* causing enterohepatitis in turkeys. The method (originally adopted by Tyzzer in 1920) involves the rectal injection of a fresh liver suspension obtained from turkey poults, recently dead or killed at the height of the disease. A measured quantity of 5 ml. of suspension was injected into each bird. Since there was no record of the actual number of organisms present, the apparent increase in virulence of the culture on serial passage might be due to an increase in the number of organisms in each unit of the culture.

II. Maximum tolerated drug levels were determined experimentally for a variety of substances thought likely to be of use in the control of enterohepatitis. Many proved ineffective although stovarsol gave promising results in some of the trials.

It is suggested that very little immunity is developed by infected treated turkeys. [The whole question of immunity to *H. meleagridis* requires investigation.] Whole blood from

solidly immune turkeys failed to protect susceptible poults.—S. Brian Kendall.

Desowitz, R. S. (1950.) **Protozoan hyperparasitism of *Heterakis gallinae*.** [**Correspondence**].—*Nature, Lond.* **165.** 1023-1024. **697**

Female *Heterakis gallinae* recovered from turkeys which had died of blackhead were examined, sections being stained by the Giemsa-Colophonium technique of Shortt and Cooper. A protozoan parasite discovered in the gut epithelium of one of the worms may be a developmental stage of *Histomonas meleagridis*. —S. Brian Kendall.

Gorrie, C. J. R. (1950.) **Management in control of coccidiosis in chickens.**—*Aust. vet. J.* **26.** 223-225. **698**

G. discussed the relative importance of hygiene and resistance of the particular batch of chickens as factors influencing the development of coccidiosis. It is considered that marked changes in environment produced by seasonal changes might render the chickens more susceptible to coccidia already established in the bowel.—D. F. Stewart.

Grumbles, L. C., Delaplane, J. P. & Higgins, T. C. (1949.) **Continuous feeding of low concentrations of sulfaquinoxaline for the control of coccidiosis in poultry.**—*Poult. Sci.* **27.** 605-608. **699**

Good caecal (*Eimeria tenella*) and intestinal (*E. necatrix*) control is obtained by continuous feeding of sulphaquinoxaline at 0·0125% in an all mash ration. The total coccidiosis mortality of birds on drug diets varied from 0·25–2·09% as compared with non-medicated controls of 13·2–20·3%.—Malcolm Woodbine.

Guilhon, J. (1949.) Traitement des coccidioses animales par les sulfamides. [**Animal coccidiosis treated with sulphonamides.**]—*Encyclopéd. vét. période.* **6.** 115-122. **700**

This paper is a good, although condensed, account of the evolution of treatment by sulphonamides of coccidiosis in fowls, cattle, sheep, and rabbits. [The literature on this subject has grown to vast proportions in recent years and it is inevitable that references to some important American papers have been omitted.]. —C. Horton Smith.

Calzada, V. (1940.) Sobre coccidiosis en palomas mensajeras. [**Coccidiosis in homing pigeons.**]—*Rev. Med. vet., Montevideo.* **3.** 410-419. **701**

C. notes the occurrence of an epizootic of *Eimeria pfeifferi* infection in pigeons, aggravated by a concurrent infestation with *Ascaridia columbae*. He carred out a detailed histological examination of the lesions in the intestines. He was unable to transmit the infection by feeding the coccidia to healthy young pigeons. —I. W. Jennings.

Goodwin, L. G. (1949.) **Response of *Plasmodium berghei* to antimalarial drugs.** [Correspondence.]—*Nature, Lond.* **164.** 1133. **702**

The quinine equivalents of pamaquin, mepacrine and paludrine when determined by tests in mice inoculated intraperitoneally with *Plasmodium berghei* differed strikingly from the values found by the chick method of Curd *et al.* [see *V.B.* **17.** 157] using *Pl. gallinaceum*. —Nesta Dean.

Talice, R. V. (1950.) Remarques sur quelques cas de géographie parasitaire en Uruguay. [**Distribution of piroplasmosis and Chagas' disease in Uruguay.**]—*Bull. Soc. Path. exot.* **43.** 290-294. **703**

In an address based on observations made in Uruguay over a period of many years, T. referred first to piroplasmosis and bovine anaplasmosis. "La tristeza" occurs only north of the river Negro, for the vectors, *Margaropus* spp. for some unknown reason have never become acclimatized south of the river despite the frequent passage of infected animals from one bank to the other. For many years the river has also been the southern barrier to furunculous myiasis caused by *Dermatobia cyaniventris* and to Chagas' disease, transmitted by *Triatoma infestans*, but in recent years the vectors of both diseases have established themselves south of the river, and Chagas' disease has spread over quite a large area of South Uruguay. The possible factors involved in this dissemination were discussed.—M. L. Clarke.

See also absts. **901** (report, U.S.A.); **904** (book, infectious animal diseases); **905** (book, veterinary medicine); **906** (book, parasitology).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

Granouillit, (1949.) Quelques aperçus au sujet de la fièvre aphteuse au Royaume du Cambodge. [**F. & M. disease in French Indo-China.**]—*Rev. Méd. vét., Lyon et Toulouse.* **100.** 581-584. **704**

The recent introduction of F. & M. disease into French Indo-China is thought to be of European origin as a result of air transport. It was first brought to the notice of the authorities by the sudden death of a young bull. It

is held that the virus is less benign than at first thought, and the lack of information is ascribed to reticence and ignorance on the part of the indigenous population.—G. V. LAUGIER.

ROTTGARDT, A. A. & EZCURRA, R. (1948.) Proceso evolutivo de la fiebre aftosa. (Segunda parte.) [**The development of the lesions of F. & M. disease. Part II.**]—*Publ. Misc. Direcc. Inform., B. Aires.* No. 283. pp. 17. **705**

A brief description of the macroscopic lesions and the course of the disease in sheep and swine. 18 colour plates are included.

—M. NORAMBUENA.

BLANC, R. A. (1949.) Duración de la hipertermia en bovinos inoculados con virus aftoso. [**The temperature reaction in cattle experimentally infected with F. & M. disease.**]—*Publ. Lab. Invest., B. Aires.* No. 11. pp. 13. **706**

The temperature of cattle inoculated intralingually became normal about 72 hours after the lesions had developed. 18 temperature charts are given.—M. NORAMBUENA.

PETERMAN, H. (1949.) Cultivo del virus aftoso en embrion de pollo. [**Cultivation of the virus of F. & M. disease on the chick embryo.**]—*Gac. vet., B. Aires.* **11.** 230-234. **707**

P. describes a successful attempt to cultivate the virus on the chorioallantoic membrane and other tissues of chick embryos [presumably 9–10 days old]. Six alternate passages were first made in g. pigs and eggs. Twenty-five direct passages on eggs were made.

The type of virus used was an A strain freshly collected from g. pigs. The eggs were inoculated on the chorioallantois with 0·25 ml. of filtrate and incubated at 37·5° C. for 40–45 hours.

The embryonic chick tissues were tested in g. pigs for presence of virus and it has been shown that the chorioallantoic membrane, the allantoic and amniotic fluids and the embryo, previously washed, were infective, although no titrations of the virus content were made.

The complement-fixation test was used to identify the virus; the specific reaction was found to decrease with passage. A thickening of the chorioallantoic membrane was also observed in some of the infective eggs.

—M. NORAMBUENA.

BLANC, R. A. (1949.) Conservación del virus aftoso en glicerina al 50% en medio de Vallée y por congelación. [**Preservation of F. & M. disease virus in glycerin, in Vallée's medium and by freezing.**]—*Publ. Lab. Invest., B. Aires.* No. 12. pp. 9. **708**

Bovine epithelium in 50% glycerin in tap water, pH 7·2 was infective after 1,383 days' storage at 2° C. In the phosphated Vallée medium, at pH 7·5, epithelium was infective after 1,125 days. Frozen epithelium at −30° C. with and without tap water (pH 8·3) was infective after 213 and 132 days respectively.

[No quantitative estimations of infectivity were carried out in these experiments.]

—M. NORAMBUENA.

JONNESCO, D. (1948.) Recherches sur la maladie d'Aujeszky. [**Research on Aujeszky's disease.**]—*Arch. roum. Path. exp. Microbiol.* **15.** 122-134. [In French. Russian and English summaries.] **709**

The author identified a new Aujeszky's disease virus in the cat; this No. 2 virus is less virulent than No. 1 virus identified by him in 1934. The rabbit is the most susceptible experimental animal, then the g. pig, the white mouse and less so, the dog. Incubation in rabbits is two days, in g. pigs three days, in white mice 3–4 days and in dogs five days.

When the virus is rubbed into the shaved skin of young dogs, vesicles appear which very rapidly change into pustules and finally become covered with crusts. These vesicles are produced by this new virus as well as by No. 1 virus. The production of these vesicles creates immunity in dogs which is ascertained by the viricidal action of the blood serum and the resistance to re-infection.

J. concluded that because of the acquired immunity in dogs resulting from friction or scarification of the skin with formation of vesicles he considers the virus of Aujeszky's disease to be close to the herpes virus and that a new dermatropic character should be added to the known neuro-organotropic characters of the virus.—D. S. RABAGLIATI.

LIEOU, Y. C. & KOUO, C. C. (1950.) Passages en série de virus de la maladie d'Aujeszky par scarifications de la peau chez le lapin. [**Serial passage of Aujeszky's disease virus in rabbits by skin scarification.**]—*C. R. Soc. Biol., Paris.* **144.** 629-630. **710**

A strain of Aujeszky's disease virus isolated in Shanghai in 1947 has been passaged through rabbits since then. Serial passage by skin scarification appeared to reduce the virus content of the brain to the point of complete disappearance. In order to effect serial passages by this method it is therefore necessary to use spinal cord.

—G. V. LAUGIER.

TREFLINGER, J. (1949.) Über die Lyssa bei Fuchs, Dachs und Reh. [**Rabies in foxes, badgers and deer.**]—*Wien tierärztl. Mschr.* **36.** 57-62. 711

T. recommends that more attention should be paid to the incidence of rabies in wild animals, and that any sick wild animals shot, should be sent to a laboratory for examination. Illustrating the danger, he quotes several cases of sick foxes biting men and children. He also mentions a rabid badger which killed 14 fowls in one night, and describes the behaviour of two sick roedeer, subsequently found to be infected with rabies.—I. W. JENNINGS.

GRANELLI, G. (1949.) Osservazioni cliniche e sperimentali su un focolaio di vaiuolo suino riscontrato nella zona di Parma. [**Clinical and experimental observations on swine pox infection in the zone of Parma, Italy.**]—*Riv. Med. Vet. Zootec., Parma.* **1.** 16-32. 712

G. described an outbreak of swine pox in Italy, affecting three piglets of the same litter. No cases of variola in other animals or in human beings could be discovered in the neighbourhood.—G. P. MARSHALL.

MORGAN, C. & WYCKOFF, R. W. C. (1950.) **The electron microscopy of fowl pox virus within the chorioallantoic membrane.**—*J. Immunol.* **65.** 285-295. [Authors' summary copied *verbatim*.] 713

Electron micrographs have been made of section through chorioallantoic membranes of chicken embryos infected with fowl pox. These show the vacuolation and granulation that are aspects of the degeneration of the proliferated epithelium. Clumps of virus particles are seen both at the surface and deep within this diseased epithelium.

WOLMAN, M. (1950.) **Application of the Feulgen reaction to the laboratory diagnosis of smallpox.**—*Proc. Soc. exp. Biol., N.Y.* **74.** 85-87. [Author's summary copied *verbatim*.] 714

A method of staining elementary bodies of smallpox is described. The method consists of the application of Feulgen's method for desoxyribonucleic acid to smears made of scrapings of the bottom of skin lesions. The procedure seems to afford the means for a quick diagnosis of smallpox, and allows differentiation of virus particles from extraneous material.

MATTIOLI, A. (1949.) Influenza dei bovini (Stazzi) (laringotracheo-bronchite infettiva—Broncho polmonite enfisematosa) (Pommier). [**Bovine influenza (laryngo-broncho-tracheitis, emphysematous broncho-pneumonia).**]—*Nuova Vet.* **25.** 396-399. 715

After describing the symptoms and causal organism (a pneumotropic virus very similar to that of infectious bronchitis in horses), M. describes outbreaks in two herds. The most characteristic symptoms are interstitial pulmonary emphysema and subcutaneous emphysema. —K. SLAVIN.

BARDOULAT. (1950.) Grippe des bovidés: sinusite. [**Bovine influenza: sinusitis.**]—*Rec. Méd. vét.* **126.** 475-478. 716

B. described a form of influenza in cattle in which there was frequently an inflammation simulating gangrenous coryza, this symptom sometimes extending to the sinus. When orthodox treatment failed, homoeopathic drugs were stated to have produced spectacular recovery. —D. S. RABAGLIATI.

KALTER, S. S. (1949.) **Hemagglutinating behaviour of mouse and egg-adapted type A (PR8) influenza virus.** — *Science.* **110.** 184. 717

Mouse adapted and egg-adapted virus was inoculated into 10–12-day embryos. Allantoic fluid was harvested every two hours for 24 hours and titrated for haemagglutination. The egg strain produced haemagglutination at least four hours earlier than the mouse strain. One egg passage, however, was sufficient to make the mouse strain indistinguishable from the egg strain in haemagglutinating capacity. K. postulates that "the virus particle in adapting itself to a host alters itself to take advantage of the new host's metabolic system. Thus when the virus is introduced into a new host with a slightly different metabolic pattern a probable re-arrangement of the virus molecule occurs". —D. LUKE.

HUGHES, T. P. & PERLOWAGORA, A. (1950.) **The antigenic relationships of certain viruses capable of producing encephalitis in mice, as shown by complement fixation tests.**—*J. Immunol.* **65.** 155-161. [Authors' summary copied *verbatim*.] 718

Mouse brain antigens and hyperimmune mouse antiserum were prepared for each of 15 strains of encephalitogenic viruses. Each serum was tested against each antigen by means of the complement fixation reaction. It was shown that four virus strains recently isolated in Brazil have a common antigenic component and are antigenically related to the Anopheles B virus previously isolated in Colombia. The virus of Ilheus encephalitis was found to be antigenic-

ally related to the West Nile-St. Louis-Japanese B. group, and the antigenic interrelationship of the other viruses of this group has been confirmed. The virus of yellow fever appears to have a minor antigenic relationship to the Wyeomyia and Bwamba viruses. One newly-isolated Brazilian strain is, on the basis of the tests employed, antigenically unrelated to any of the other viruses studied; likewise the Anopheles A virus is antigenically separate from all of the other strains examined, as is the Semliki forest virus.

CASSAMAGNAGHI, A. & CASSAMAGNAGHI, A. (h.) (1948.) La anemia infecciosa. Su reconocimiento en los equinos del Uruguay. [**Equine infectious anaemia in Uruguay.**]—*Rev. Med. vet., Montevideo.* **4.** 772-807. 719

In experimental work done on 15 horses inoculated with different passages of the original infective blood, the disease was reproduced, this being the first evidence of its existence enzootically in some regions of Uruguay.

The disease is thought to have existed unrecognized for a long time, particularly in marshy lands where a great number of horses are affected during the hot and damp seasons.

The various forms of the disease have been produced experimentally and its course as well as the symptoms and lesions are in accordance with those described in other countries.

It is believed that the disease is not confined to the places where it has been reported, but that it may also be present in many other areas in Uruguay and in other South American countries, where, apart from Venezuela, it has not so far been described.—M. NORAMBUENA.

CILLI, V. (1948.) Contributo alla conoscenza della adattabilita' degli ultravirus in differenti terreni di localizzazione specifica secondo la specie animale. [**Adaptation of the African horse-sickness virus to g. pigs.**]—*Atti. Soc. ital. Sci. vet.* **2.** pp. 29-53. [English and French summaries.] 720

To produce a virus for use in vaccination against African horse sickness, two strains from two mules which had died of a natural infection were passaged in the central nervous system of g. pigs for 12 years. In the process the neurotropic characteristic of the virus became more marked.

C. discussed the reaction of horses and mules to the neurotropic virus and concluded that the natural virus must be pantropic; viscerotropic in horses and neurotropic or rather neuro-mesodermotropic in g. pigs.

—K. SLAVIN.

VAN SACEGHEM, R. (1950.) Atténuation de la virulence du virus de la peste bovine par passage sur chèvres. [**Attenuation of rinderpest virus by passage in goats.**]—*Rev. Path. comp.* **50.** 76. 721

The author claims to have been the first to describe the loss of rinderpest virus virulence by passage through goats. Reference is made to his observations made in 1922 in this connexion.—G. V. LAUGIER.

DELPY, L.-P. (1950.) Les vaccins modernes contre la peste bovine. Etude comparative des vaccins inactivés et des virus atténués (Virus-vaccins). [**A comparison of killed and living rinderpest vaccines.**]—*Bull. Off. internat. Epiz.* **33.** 229-259. 722

In an endeavour to show the superiority of killed rinderpest vaccine over the living ones, D. made a detailed study of the modern inactivated vaccine and also of the attenuated virus-vaccine production and methods of use.

At a conference held in Nairobi [See *V.B.* 19. 209] the general use of the inactivated virus-vaccine was condemned because (1) the immunity conferred is very short lived; (2) production is costly in animal donors; (3) infection may be spread by atypical cases which occur during the period when the immunity is only weak, and (4) the excessive bulk of the products is a hindrance to their transport and use. D. discusses these objections and refutes them at some length.

He describes in considerable detail the various methods of preparation of the attenuated vaccines; and gives a résumé of his experiments with these methods at the Institut d'Hessarek in Persia.

He concludes that: (1) The direct causes of the persistence or the recurrence of rinderpest in a country are in relation to the methods of animal husbandry and the degree of perfection (or imperfection) of the veterinary services; (2) The deeper causes are the climate, the geography and nature of the soil, the standard of social and economic life of the people, the equipment of the country and even its administration; (3) The ideal vaccine does not exist; (4) The inactivated vaccines properly prepared are neither too costly nor too bulky. They present an enormous advantage over other methods as they can be used at the beginning of an outbreak and arrest the death rate rapidly. As they are innocuous they are accepted by breeders and even by the most difficult of peasants; (5) These vaccines allow of the total eradication of the disease; (6) Of the attenuated viruses, the goat vaccine is the only one of

general or practical use. Its only advantage over the killed vaccine is the greater duration of the immunity conferred. In practice, however, it is said sometimes to be less than six months; (7) Owing to the severe reactions which this vaccine produces, the vaccine cannot be used in districts where rinderpest has not been severe; (8) The use of a living virus, even if attenuated, presupposes confidence in its standardization, which up to the present is not entirely justified; (9) The use of rabbit virus and vaccine produced through chick embryos, deserves more investigation, but they are very difficult to prepare and too fragile for large-scale use.

There is an appendix on the technique of the preparation of the formolized anti-rinderpest vaccine.—D. S. RABAGLIATI.

HRUŠKA, K. (1950.) Experimentální práce o aktivní immunisaci proti obrně vepřů adsorbátovou vakcinou a vakcinou krystalviolet'ovou. [**Experimental immunization against porcine encephalomyelitis with crystal violet vaccine and adsorbate vaccine.**]—*Čas. československ. Vet.* **5.** 289-300. [French and Russian summaries.] **723**

Instead of preparing the vaccine against swine paralysis by adding aluminium hydroxide gel to the brain emulsion and inactivating the adsorbate with formalin, as described by Traub, H. follows the reverse procedure, first inactivating the virus in the 20% brain emulsion with 0·5% formalin and adding the aluminium hydroxide eight days later. Comparing the results obtained with these vaccines in numerous experiments, the superiority of H.'s method of preparation was clearly demonstrated. Still better vaccination results were obtained with the formalinized emulsion to which, instead of the aluminium hydroxide, crystal violet had been added. Subdural vaccination gave a somewhat better immunity than subcutaneous. Immunity is attained 3–4 weeks after vaccination, but vaccination of very young animals does not result in immunity. The vaccine quickly loses its antigenic efficacy and should be used within two months of preparation. Field vaccinations numbered in thousands in heavily infected districts reduced the incidence of the disease. New cases were, with few exceptions, limited to pigs introduced from outside those districts. In seven cases, acute ascending paralysis occurred after use of the crystal violet vaccine, similar to the paralysis sometimes caused by rabies vaccines. H. considers that this might possibly be an allergic reaction of virus carriers to the vaccine.

—A. MAYR-HARTING.

CAZENAVE, M. (1950.) Influence de la race sur la maladie de Carré. [**Breed variation in susceptibility to canine distemper.**]—*Rev. Med. vét., Lyon et Toulouse.* **101.** 63-65. **724**

C. comments on the differing susceptibilities of different breeds of dogs to the effects of distemper, as observed clinically. Terriers and Pomeranians are most resistant and frequently recover from the disease with only little attention. Sporting breeds are most susceptible and sheepdogs are extremely so. C. suggests that neglect of differing breed susceptibilities is responsible for discrepancies observed in the assessment by different authors of the value of the various prophylactic measures against distemper.—H. PLATT.

COURRÈGES, LOUF, PETROV & PALLAS. (1949.) Observations cliniques et thérapeutiques sur la maladie de Carré. [**Clinical observations and therapy of canine distemper.**]—*Rev. vét. milit.* **4.** pp. 85-89. **725**

A classification of the differing clinical syndromes observed among two groups of dogs affected with distemper, with particular reference to the nervous and atypical forms. All the dogs were Alsatians or Alsatian crosses. The first group consisted of 40 dogs aged 3 months–2 years and reared individually by their owners; the second group numbered 35 animals of all ages living communally. Therapy and prophylaxis are also discussed.—H. PLATT.

STÜNZI, H. (1950.) Hepatitis contagiosa canis (Rubarth). [**Contagious hepatitis in dogs.**] —*Schweiz. Arch. Tierheilk.* **92.** 354-374. [English, French, and Italian summaries. Abst. from English summary.] **726**

Three cases in Switzerland are described. Clinically an etiological diagnosis was not possible, the lesions however were largely identical with those mentioned by Rubarth. P.M. examination revealed mainly acute inflammation of the liver, oedema of the wall of the gall bladder, serous infiltration of the aortal wall, thymus, mediastinum and pancreas. Histological examinations demonstrated a serous or even hemorrhagic acute hepatitis with a high degree of regressive changes of the parenchyma. Intranuclear inclusion bodies were found in the degenerated liver cells and in the endothelia of various organs. Although transmission experiments and serological examinations could not be performed, S. states that the identity of this

disease was evident. Chemotherapeutic and antibiotic treatments failed. According to recent American publications fox encephalitis serum + antibiotics seem to be useful.

HORSFALL, F. L., JR. (1950.) **Chemotherapy in viral infections.**—*Amer. J. med. Sci.* **220.** 91-102. 727

A general review with 52 references. In pneumonia virus of mice (PVM), polysaccharide exerts no inhibitory effect unless given intranasally. In experimental infections with PVM a single injection of Friedländer polysaccharide given as late as four days after inoculation of the virus causes significant inhibition of virus multiplication. Among the viruses studied with polysaccharides, only mumps virus has given analogous results. It was found that mumps virus interferes with the multiplication of PVM in the mouse lung.—W. R. BETT.

CORDIER, G., CLAVIERAS, J. & OUNAIS, A. (1950.) De quelques recherches consacrées au virus de la maladie de Newcastle en Tunisie. **[A study of the Newcastle disease virus in Tunisia.]**—*Ann. Inst. Pasteur.* **78.** 242-261. 728

A 48-hour culture on 11-day embryos was used for vaccine production. Virus from pulped embryos reached a higher haemagglutinating titre than that from the extra-embryonic fluids. This difference persisted even after 12 passages of the virus. Only strains reaching a haemagglutination-inhibition titre of at least 1:572 were retained for vaccine preparation.

Normal serum from horses, cattle and sheep did not contain any antibody, but the blood of workers in the Newcastle disease laboratory was found to contain specific antibodies.

The authors also discuss the adsorption of the virus on aluminium hydroxide,such adsorbed virus having less virulence.—D. LUKE.

DOLL, E. R., MCCOLLUM, W. T. & WALLACE, M. E. (1950.) **Immunization of chicks hatched from hens immunized against Newcastle disease.**—*Vet. Med.* **45.** 365-369. [Authors' summary copied *verbatim.*] 729

An immunizing reaction occurred in parentally immune chicks at all ages from one day upward following intranasal instillation of living Newcastle disease virus. The degree of immunization appeared to be influenced by the amount of yolk-transferred antibody, the age of the chicks, and the virulence of the virus.

Chicks hatched from hens having high virus neutralizing titers in the serum and egg-yolk were not uniformly immunized against lethal infection with the highly virulent GB virus.

PRIER, J. E., MILLEN, T. W. & ALBERTS, J. O. (1950.) **Studies on Newcastle disease. IV. The presence of Newcastle disease virus in eggs of hens vaccinated with live vaccine.**—*J. Amer. vet. med. Ass.* **116.** 54-55. 730

Eggs from ten vaccinated farm flocks were examined for haemagglutination-inhibition titre and the presence of virus. In no case was virus isolated from the 192 eggs examined. Antibodies were found in the eggs as early as 19 days after vaccination, and in some cases they were still present 109 days after vaccination.

Fifty eggs from an experimental group of 18 vaccinated hens were incubated. At the tenth day nine were found either infertile or containing dead embryos. From two of the dead embryos virus was isolated. These eggs had been laid four or five days after vaccination. It is considered that eggs containing virus would be unlikely to hatch infected chicks and that the development of antibody in the eggs from immune hens would prevent the development of active virus.—D. LUKE.

MILLER, B. R. & MILLER, R. E. (1950.) **Distribution of Newcastle disease virus in, and elimination from, intratracheally and intramuscularly inoculated birds.**—*J. Amer. vet. med. Ass.* **117.** 229-233. 731

Two groups of four chickens each 10 weeks old were inoculated with vaccine virus intramuscularly and intratracheally. A healthy chicken was placed in contact with each of the experimental birds. At the end of 10 days all the birds were killed and examined. In both inoculated groups there was evidence of Newcastle disease. Of the in-contacts, evidence of Newcastle disease was found only in those in contact with the intratracheally inoculated group.

Daily blood samples collected over the experimental period of 10 days were tested for Newcastle disease virus; only three samples yielded positive results.—D. LUKE.

KILHAM, L. (1950.) **Transmission and multiplication of Newcastle disease virus (NDV) in brains of suckling mice.**—*Proc. Soc. exp. Biol., N.Y.* **74.** 220-222. [Author's summary copied *verbatim.*] 732

Suckling mice of the Swiss albino strain are susceptible to Newcastle disease of fowls following intracerebral inoculation. This has

been demonstrated by ten consecutive passages of the California and of an Australian strain of NDV.

BANKOWSKI, R. A. (1950.) **Further studies on *in vitro* cultivated pneumoencephalitis (Newcastle disease) virus and its use as a vaccine.**—*Vet. Med.* **45.** 322-327. 733

Virulent virus propagated in tissue culture steadily lost virulence on passage, and by the 41st–50th passage it produced no mortality among experimental chickens (22–81 days old). This passaged virus, however, induced a satisfactory haemagglutination-inhibition response and chickens vaccinated with this virus withstood challenge by virulent virus; it was, however, still lethal for chick embryos and caused mortality in two-day-old chicks.

Vaccination trials are reported in which *in vitro* propagated virus was administered by means of an atomizer. When three-day-old chicks were exposed to atomized virus for 75 min., 6·6% mortality occurred as well as some evidence of nervous damage among those that survived. No mortality was observed among 9-day and 18-day chicks exposed to virus for 60 min. and 15 min. respectively. Such vaccinated chicks withstood challenge by virulent virus and did not appear to be infective for susceptible chicks in contact with them.

—D. LUKE.

WINSLOW, N. S., HANSON, R. P., UPTON, E. & BRANDLY, C. A. (1950.) **Agglutination of mammalian erythrocytes by Newcastle disease virus.**—*Proc. Soc. exp. Biol., N.Y.* **74.** 174-178. [Authors' summary and conclusions slightly modified.] 734

The ability of NDV [Newcastle disease virus] to induce agglutination of mammalian erythrocytes of certain species is a character possessed by some but not all strains of the virus. The erythrocytes of certain individuals of such species as the cow, the horse, and the sheep are more susceptible than those of others to agglutination by NDV. Agglutination of mammalian red blood cells, as a rule, may be recorded accurately as the percentage of individuals whose cells are susceptible to the action of a given strain of NDV and not as a uniformly negative or positive result. This percentage of erythrocyte susceptible individuals may range from zero in some species to 100% in others, but in most species lies between these extremes so that its consideration is warranted in every instance. It was demonstrated that the pH may affect the agglutination of mammalian red blood cells and, consequently, alter the interpretation of the test. If suitable controls of the variables of the test are included and the source of red blood cells is properly selected many strains of NDV may be differentiated by their mammalian agglutination range or spectrum.

The mechanism underlying these observations has not been investigated. The most obvious explanation predicates differences in the agglutinative activity of the virus strains, possibly associated with variable levels of enzyme production or activity. Chu [*V.B.* **20.** 431] would hold accountable differences in the levels of one or more inhibitors of hemagglutination. In either case, the activity seems to be associated with lines or strains of virus. The differing hemagglutinative susceptibility of individual donors suggests that the mechanisms involved are rather complex.

The phenomenon of agglutination of mammalian erythrocytes has practical application in maintaining the identity of stock strains of virus and possibly also in determining probable intermingling of the viruses of live vaccines and wild strains in field outbreaks of Newcastle disease.

JACOTOT, H., VALLÉE, A. & LE PRIOL, A. (1950.) Un cas de conjonctivite humaine à virus de Newcastle (peste aviaire) contractée au laboratoire. **[Human conjunctivitis caused by laboratory infection with the virus of Newcastle disease.]**—*Bull. Acad. Méd., Paris.* **134.** 106-108. 735

A unilateral conjunctivitis developed in one of the authors, following accidental inoculation of the eye with Newcastle disease virus. This virus was found in the conjunctival secretions.

—W. R. BETT.

PARODI, A. S. (1949.) La acción de la penicilina en la psitacosis. **[Action of penicillin in psittacosis.]**—*Rev. Inst. bact., B. Aires.* **14.** 176-179. 736

Using a serological reaction as the criterion, P. considers that doses of 100,000 units penicillin per day exercise some beneficial action on the infection in human beings.

—MALCOLM WOODBINE.

HORSTMANN, D. M. & MELNICK, J. L. (1950.) **Poliomyelitis in chimpanzees. Studies in homologous and heterologous immunity following inapparent infection.**—*J. exp. Med.* **91.** 573-597. [Authors' summary copied *verbatim*.] 737

The response of 18 chimpanzees to poliomyelitis virus administered orally and cutaneously has been studied. There were no signs

of weakness or paralysis in any of the animals. Sixteen of the 18 (89%) became infected as measured by intestinal carriage of virus. Only one of 12 was reinfected when challenged with an homologous (or homotypic) strain by the same routes, but seven of ten were reinfected on heterologous challenge. A correlation between the development of humoral antibodies and resistance to reinfection was demonstrated.

During the course of these experiments, two chimpanzees acquired inapparent poliomyelitis by accidental contagion in the laboratory.

BLANCHARD, M. C., STOKES, J., JR., HAMPIL, B., WADE, G. R. & SPIZIZEN, J. (1948.) **Methods of protection against homologous serum hepatitis. II. The inactivation of hepatitis virus SH with ultraviolet rays.**—*J. Amer. med. Ass.* 138. 341-343. [Authors' summary slightly modified.] 738

A practical, safe and effective method for irradiating icterogenic serum and plasma is presented. Of 15 volunteers who received non-irradiated icterogenic serum, three developed hepatitis with jaundice, one hepatitis without jaundice and three had presumptive hepatitis. Of 11 volunteers who received irradiated icterogenic serum, none showed any evidence of hepatitis. Similarly irradiated plasma revealed no alteration of the electrophoretic pattern. By chemical fractionation methods, the plasma proteins were essentially normal. There was a slight decrease in prothrombin and complement. The initial inoculation of 11 volunteers with irradiated serum produced no untoward reaction. Subsequent inoculation of ten of these volunteers with irradiated plasma intradermally, intramuscularly and intravenously, revealed no evidence of acquired sensitivity. This clearcut result strongly favors the routine use of exposure to ultraviolet rays of serum and plasma under properly standardized conditions.

ANDERSON, T. F. (1950.) **Bacteriophages and their action on host cells.**—In *"Research in Medical Science"*. pp. 1-16. [New York, The MacMillan Co. London: Macmillan & Co. Ltd.] 739

Bacteriophages are being studied in an attempt to learn more about the fundamental relations between virus and host cell. A major portion of the investigations was made on a set of seven phages (designated T1 to T7) which are active on a single strain B of *Bacterium coli*. The morphology of these seven phages was determined with the electron microscope. They were also identified serologically and by means of their host specificities. Phages aer capable of mutations which affect characteristics such as host range, the size and appearance of plaques and the chemical requirements for adsorption. By means of these genetic markers Hershey has demonstrated hybridization between related phages. The concept that phage particles within host cells exchange genic characters has been strengthened by observations of Luria that ultra-violet-irradiated phage particles may be reactivated if two or more such particles simultaneously infect a single cell.

Anderson observed that the aromatic amino acids L-tryptophan, phenylalanine, diiodotyrosine and tyrosine enhanced phage adsorption. These adsorption co-factors combined reversibly with the phage itself rather than with the host cell thus making the phage active rather than the host "receptive" to the phage. Once activated, the rate of adsorption of T4 was shown to be nearly equal to the calculated rate of collision between phage particles and host cells in the Brownian movement of the medium. Stirring the phage-host cell mixture with a Waring-type blender prevented adsorption. This suggested that the shearing forces in the blender separated the phage particles from the host cells they encountered before the two had time to react in an irreversible manner. The metabolism of the host bears a direct relation to its sensitivity to phage. For example, bacteria incubated at 37°C. are able to liberate enough co-factor to activate the phage and are therefore susceptible to its attack; whereas bacteria held at 15° C. do not produce enough co-factor and are immune to the phage unless the co-factor is supplied from without.

Bacteria infected with phage do not multiply and are not able to synthesize oxidative enzymes. Cohen reported that the synthesis of ribose nucleic acid is blocked by the phage. Doermann and Anderson have followed the synthesis of T3 phage in host cells by disrupting the cells with sonic vibration at intervals after infection. From these studies it appeared that complete phage particles are formed in the host cell only after a definite preparatory period.

Latarjet has followed the rate of X-ray inactivation of T2 infected cells throughout the period during which phage is multiplying within the cells. The inactivation curves he obtained suggested three steps between infection and lysis. The first step involves synthesis of material by the phage in preparation for the second step which is its multiplication. During the third

phase the new units mature to form particles capable of survival outside the bacterial cell following their liberation.

The specificity of the reaction between phage and host, the blocking of cellular synthesis and the completeness of lysis all suggest that the phage enters into an intimate combination with the organized synthetic structure of the host.—L. M. Jones.

I, II & III. Cohen, S. S. & Arbogast, R. (1950.) **Chemical studies in host-virus interactions. VI. Immunochemical studies on the purity of concentrates of various bacterial viruses prepared by differential centrifugation procedures. With an appendix summarizing data on the desoxyribonucleic acid content of these viruses. VII. A comparison of some properties of three mutant pairs of bacterial viruses, T2r+ and T2r, T4r+ and T4r, T6r+ and T6r. VIII. The mutual reactivation of T2r+ virus inactivated by ultraviolet light and the synthesis of desoxyribose nucleic acid.**—*J. exp. Med.* 91. 607-618; 619-636; & 637-650. [Authors' summaries copied *verbatim*.] 740

I. Three mutant pairs of bacterial viruses T2r+ and T2r, T4r+ and T4r, T6r+ and T6r, have been concentrated by differential centrifugation and analyzed. Under conditions of prolonged lysis of organisms grown on broth-agar, the virus concentrates frequently contained phosphorus (P) other than that contained in desoxyribose nucleic acid (DNA). These concentrates reacted with antisera to the host organism, *E. coli*, specifically precipitating the non-DNA-P but not virus activity or DNA. The amounts of nitrogen precipitated in the virus concentrates by antisera were related to their content of non-NDA-P. These viruses could be purified by differential centrifugation after such treatment to yield preparations apparently free of P other than DNA-P. It has been concluded that there is no satisfactory evidence for the presence of ribose nucleic acid as a constituent part of these viruses.

II. Various chemical and physiological aspects of the reproductive cycles of r+ and r strains of T2, T4, and T6 viruses have been examined and compared. These include the ultraviolet absorption spectra in which differences between r and r+ strains were not observed, though they were obtained in the case of T2, T4, and T6. Adsorption of T4 and T6 was found to require the adsorption co-factor *l*-tryptophane. Among the r and r+ strains of these viruses limiting tryptophane requirements for adsorption were found to be different. Some differences were observed in the one-step growth curves of these viruses under conditions of single and multiple infection. The turbidity-time relations of infected cultures were characteristically different. The rates of DNA and protein synthesis in the infected cells were found to be independent of the viruses used. Certain implications of the data have been discussed.

III. A method has been described for following purine and pyrimidine synthesis in intact cells by measuring the ultraviolet absorption of a bacterial suspension. It has been shown that in cells infected with active virus, the rate of increase of ultraviolet absorption at 2600 Å corresponded to that of DNA, although preceding DNA synthesis slightly. The amount of separation of the curves in time was determined by the multiplicity of infecton.

Under conditions of mutual reactivation of ultraviolet-irradiated virus, DNA synthesis was inhibited but not the increase in ultraviolet absorption. Thus a continuing purine and pyrimidine synthesis was indicated by the increase in this function. When an intact virus particle could be found within these bacteria, however, DNA synthesis began at the rate characteristic of normal infections. Certain peculiarities of lysis in this system were noted.

The significance of these observations for various genetic theories has been discussed. It would appear that Luria's hypothesis of independent gene pool synthesis has probably been disproven. It has also been shown that the lesion produced by irradiation of a virus particle with ultraviolet light probably occurs in the DNA of the particle. The validity of these conclusions will depend on a knowledge of the relation of virus protein synthesis to DNA synthesis in this system.

Monaci, A. (1949.) Cenni sull'etiologia e la terapia della cosidetta "cecarella" o cheratocongiuntivite infettiva degli ovini e dei bovini. **[Aetiology and therapy of kerato-conjunctivitis in sheep and cattle.]**—*Nuova Vet.* 25. 353-355. 741

From observations made during an outbreak which occurred in the spring of 1947, M. regards the disease as a rickettsiasis according to its epidemiological characteristics. It appeared six days after a vaccination against anthrax and quickly spread over a herd of 60 sheep and some young cattle. The symptoms were those of a conjunctivitis with mucopurulent discharge and corneal opacity; in the gravest cases, which occurred among animals in poor general condition, corneal opacity was

observed. Horses and pigs in contact remained healthy.

Early treatment is advised in order to avoid further complications with losses in weight, especially when young cattle are affected. Calomel, opththalmic ointments with penicillin and vitamins A and C led to a complete recovery in 1–2 weeks.—M. NORAMBUENA.

RIZVI, S. W. H. (1950.) **Transmission of *Rickettsia conjunctivae* to goats.**—*J. Amer. vet. med. Ass.* **117.** 409-411. [Author's summary copied *verbatim.*] **742**

Conjunctivitis in young goats, due to *Rickettsia conjunctivae*, is easily transmitted by mechanical means and also by contact. Symptoms appear in three days and rickettsia seven days later. Infection introduced in one eye spreads to the other.

STAMP, J. T., WATT, J. A. & JAMIESON, S. (1950.) **Tick-borne fever as a cause of abortion in sheep—Parts I & II.**—*Vet. Rec.* **62.** 465-470. **743**

For many years, tick-borne fever has been blamed for causing abortion in ewes which have been recently introduced to tick infested land. Experimentally, a high percentage of pregnant ewes aborted following infection wih tick-borne fever, and a field trial in which half a flock of susceptible sheep were actively immunized by subcutaneous inoculation of 10 ml. of virulent tick-borne fever blood several weeks before service gave results which supported the laboratory experiments. Field evidence to support the view that tick-borne fever may cause abortion is presented, but it is pointed out that, until better techniques for the diagnosis of the disease and standardization of the infective agent exist, interpretation of results must remain difficult.—G. B. S. HEATH.

PELLISSIER, A., TROQUEREAU, P. & TRINQUIER, E. (1950.) Etudes sur les rickettsioses humaines et animales en Afrique Equatoriale Française. II.—Une Rickettsiose du chien, fièvre exanthématique animale. **[Human and animal *Rickettsia* infections in French Equatorial Africa. II. *Rickettsia* infection in dogs.]**—*Bull. Soc. Path. exot.* **43.** 65-76. **744**

This paper describes a newly recognized disease of the dog caused by a *Rickettsia*. From observations on some 40 cases the authors conclude that there are three clinical forms. In the nervous form the temperature is rarely above 40°C. There is inappetence and usually a general swelling of the lymph nodes, of the retropharyngeal and prescapular in particular. Epileptiform fits occur at first spaced at 12–24 hour intervals, but after three or four days increasing in frequency up to six per day. After several days the fits again become less frequent. The cutaneous form may occur alone or may be superposed on the nervous. The skin lesions occur as a rash commonly restricted to areas where the skin is thin and very similar to that of distemper. In abortive forms the main diagnostic feature is the swelling of the lymph nodes. The disease is usually non-fatal, recovery occurring after several weeks. When death supervenes it is usually attributable to complications.

By the inoculation of suspension of blood clot into g. pigs intraperitoneally three strains of a *Rickettsia* were isolated which could be passaged serially in this host. A further strain was isolated from a suspension of *R. sanguineus* colected from a dog with the nervous form of the disease.

Twenty-five per cent of inoculated g. pigs die, the infection being characterized by a febrile reaction and in males by an "orchitis". The incubation period is 5–15 days. Lesions in g. pigs are congestion of the abdominal organs and an encephalitis.

A mild disease is produced on inoculation of material from g. pigs into monkeys, rabbits, rats and mice. Dogs after an incubation period of six days develop either the cutaneous or inapparent form. The infective agent is viable for 24 hours at room temperature, about 10 days or longer at 10° C. The disease can be set up in g. pigs by the inoculation of 1 ml. of a 10^{-4} dilution of a 10% brain suspension. Morphologically homogeneous bodies may be seen in the cytoplasm of cells in smears of the tunica vaginalis. Bacilliform *Rickettsia* may also be found, some in the nuclei of the cells. There is no Weil-Felix reaction either with *Proteus* OX_{19}, OX_2, OXK or OXL. Cross agglutination with different *Rickettsia* strains shows an antigenic relationship with murine typhus and epidemic typhus.

Cross immunity experiments in g. pigs showed that whereas one attack of the disease gave immunity against a second inoculation of the same *Rickettsia*, there was no cross immunity with a *Rickettsia* obtained from a local human exanthematic typhus, with Mediterranean, "fièvre boutonneuse" nor with a strain of murine typhus.

[The condition appears to be quite distinct from *Rickettsia canis* infection although *R. canis* may be present in blood smears from affected dogs.]—J. RICHARD HUDSON.

SCHUH, V. (1948.) Une épidémie de fièvre du Queensland à Strasbourg. [**An epidemic of Q fever in Strasbourg.**]—*C. R. Acad. Sci., Paris.* **226.** pp. 2189-2191. **745**

This is a report on an epidemic of Q fever among workers in the municipal abattoirs at Strasbourg. The symptoms in severely affected cases were high temperature, and diffuse broncho-pneumonia with blood-stained sputum. Diagnosis was confirmed by the complement-fixation test. The sera of 27 of 31 cases notified were examined. Of these, 23 fixed complement in titres of from 1:20 to 1:640 and 4 were negative (two sampled too early in the disease and two other diseases). A number of persons were examined several times during the course of the disease. It was found that sera taken before the eighth day of illness were negative; occasional positives and a few doubtfuls were obtained between the 8th–12th days; after the 12th day the test was regularly positive. The titre appeared to be correlated with the severity of the disease. The mean duration of the febrile attack was 12–16 days, but some cases had only headache and malaise with no pulmonary localization. In others the fever lasted only three or four days. Penicillin did not appear to influence the course of the disease. Apart from the outbreak at the abattoir only three other cases of Q fever were notified during the epidemic.

Other epidemics of Q fever are discussed and it is stressed that the disease should be suspected in cases of pneumonia which do not respond to penicillin or the sulphonamides.

—ANGUS FOGGIE.

CALLOT, J., VERMEIL, C. & PUECH, J. (1950.) Sur un souche de Q fever isolée a Strasbourg. [**A strain of *Rickettsia burneti* isolated at Strasbourg.**]—*Ann. Parasit. hum. comp.* **25.** 5-7. **746**

Two strains of *R. burneti* were isolated from workers in the municipal abbatoirs at Strasbourg in 1948. One of these cases was described by Schuh [see preceding abst.] This paper describes some properties of the second.

Ticks of the species *Rhipicephalus sanguineus* were fed on a g. pig during the febrile period following inoculation with the infection. It was found that the disease could be transmitted to other g. pigs by injecting ground up ticks, by allowing ticks to attach and feed, and by injecting tick faeces stored dry for 37 days.

On injection of infected material there was an incubation period of 4–5 days followed by a fever lasting 5–6 days. None of the g. pigs showed a scrotal reaction. As most of the infected g. pigs were killed to passage the strain an exact asessment of the mortality rate was difficult. At the beginning of the investigation it appeared to be about 10% but dropped to 0 at the end of the period. Two g. pigs resisted re-infection two months after initial infection.

—ANGUS FOGGIE.

DELAY, P. D., LENNETTE, E. H. & DEOME, K. B. (1950.) **Q fever in California. II. Recovery of *Coxiella burneti* from naturally-infected air-borne dust.**—*J. Immunol.* **65.** 211-220. [Authors' summary slightly modified.] **747**

Rickettsia burneti, the causal rickettsia of Q fever, has been recovered from dust-laden air on a dairy in Southern California, and from dust-laden air on a sheep ranch in Northern California.

The significance of these recoveries of the organism from a contaminated environment is discussed.

Subsequent to submission of this manuscript for publication, *R. burneti* was recovered from the air of a commercial goatery in Southern California (Lennette, E. H. & Welsh, H. H., to be published.)

See also absts. **782** (virus papilloma in rabbits); **813** (abortion in ewes); **836** (virofral in virus diseases); **900** (report, Cyprus); **901** (report, U.S.A.); **902** (report, Sweden); **904** (book, infectious animal diseases); **905** (book, veterinary medicine).

IMMUNITY

STALLYBRASS, C. O. (1950.) **The mechanism of antibody production.**—*Proc. R. Soc. Med.* **43.** 137-144. **748**

S. discussed recent work and formulated a hypothesis to explain the formation of antibodies, taking into account recent developments in the field of protein chemistry and enzyme systems. It was suggested that antibody globulins are produced within mitochondria or other biosomes by an enzyme system which is established when plasmagenes (structures derived from the genes but located wihin the cytoplasm), together with ribonucleic acid, enter into a system with the antigen. Reticulo-endothelial cells which have developed this new enzyme system as a result of contact with the antigen hand on the system to their daughter cells and there is also an increase in antibody production by multiplication of the modified biosomes within individual cells. Such a

hypothesis would explain the exponential curve of antibody production and the observation that in the frog the first and second stages of antibody production involve two distinct and successive mechanisms. Some such hypothesis is required to explain the absence of any direct mathematical relationship between the amount of antigen injected and the quantity of antibody produced.

In a short paper which followed ("Structure and formation of antibodies") Marrack suggested that the above theory does not adequately account for the changes in the spatial characters of the peptide chains of globulin molecules. He preferred a hypothesis which involves the view that the antigen acts as a template [an outline structure in which the amino acids are arranged in the correct pattern and then synthesized by a team of enzymes]. which either modifies the synthesis of peptide chains or determines the pattern in which their ends are coiled. The difficuly is to explain the continued formation of antibodies, the large response to a second dose of antigen, and the persistence of protein sensitivity—such as the persistence of sensitivity to tuberculin through several subcultures of fibroblasts from tuberculous animals.—E. G. WHITE.

KEUNING, F. J. & VAN DER SLIKKE, L. B. (1950.) **The role of immature plasma cells, lymphoblasts, and lymphocytes in the formation of antibodies, as established in tissue culture experiments.**—*J. Lab. clin. Med.* **36.** 167-182. [Authors' summary copied *verbatim.*] 749

Rabbits were immunized by three intravenous injections of paratyphoid B vaccine. One to four days after the last immunizing injection both white and red splenic pulp and splenic cells suspensions were found to produce agglutinins when explanted in vitro. At the height of antibody production in the animal—three to four days—red pulp material was found to produce more agglutinin than white pulp. As described by Fagraeus, in the red pulp by this time the characteristic aggregates of immature lymphoid cells, to be considered as immature plasma cells, were always found.

In splenic cell suspensions, both large, immature lymphoid cells and small lymphocytes may have contained agglutinins, but only the former ones were capable of synthesizing antibody, as deduced from experiments in which these cells were separated by sedimentation. The presence of great numbers of these large, immature cells in the characteristic cell aggregates in the red pulp, together with the high agglutinin production found in this latter material, supports the hypothesis that these antibodies will be produced in the first instance by immature plasma cells of red pulp.

The occurrence of immature lymphoid cells in white pulp where no plasma cells are found, together with an apparent production of agglutinin by this material in vitro, and a likewise apparent agglutinin content of mature lymphocytes, suggests that lymphoblastic cells of Malpighian corpuscles are also involved in antibody production to some extent. The experiments clearly refute the idea of antibody production by mature lymphocytes. Possible relationships between lymphocytogenesis and plasmacytogenesis are discussed.

FISCHEL, E. E., LEMAY, M. & KABAT, E. A. (1949.) **The effect of adrenocorticotrophic hormone and X-ray on the amount of circulating antibody.**—*J. Immunol.* **61.** 89–93. 750

Twelve albino rabbits were injected intravenously with alum-precipitated ovalbumin on four successive days each week for eight weeks with rest periods after the second and fifth weeks. They were allowed to rest for three months, then divided into two groups of six each, one group being given 25 mg. of a preparation of adrenocorticotrophic hormone (ACTH) and the second group being given 50 r. Blood was examined after immunization, after the three months' rest period and 6, 12 and 48 hours after the administration of ACTH or X-ray. After immunization the levels of antibody nitrogen varied from 60–1,300 μg. per ml. serum. Three months later the levels had dropped to 0–35 μg. per ml. After administration of the stimulus, either ACTH or X-ray, there was a fall in total circulating lymphocytes of over 50% in all rabbits except one. The serum anti-ovalbumin content at 6, 12 and 48 hours after the stimulus was either the same or diminished in all the rabbits.—E.M.J.

HAMMOND, C. W. & NOVAK, M. (1950.) **Relation of adrenal cortical steroids to antibody release.**—*Proc. Soc. exp. Biol., N.Y.* **74.** 155-161. [Authors' conclusions copied *verbatim.*] 751

The anamnestic reaction was produced by means of subcutaneously administered adrenal cortical steroids in oil to rabbits immunized against sheep erythrocytes.

Lymphocytes obtained from the appendix, thymus and mesenteric node of rabbits when injected intravenously into a normal rabbit circulate for a period of about 30 min. only.

Lymphocytes obtained from the appendix, thymus and mesenteric node of rabbits immunized against sheep erythrocytes when injected intravenously into a normal rabbit do not release antibody under the conditions of the experimental method employed.

Adrenal cortical steroids administered to a normal rabbit which also receives lymphocytes intravenously from rabbits immunized against sheep erythrocytes do not induce a release of antibody from these cells while they are circulating according to the experimental method employed.

MILES, A. A. (1949.) **Tetanus toxin and antitoxin.**—*Bull. World Hlth. Org.* **2.** 59-63. **752**

This is a note submitted to the second session of the Expert Committee on Biological Standardization. Relevant published findings are briefly reviewed, and possible lines of research are outlined. It is concluded that there would be little difficulty in producing and assaying a stable toxoid, and that an A.P.T. could be prepared from it if required. In view of the variation among toxoids, however, it is essential that one be used which ". . . will be effective in producing antibody that will protect against challenge by any toxin likely to be encountered in disease or used in the laboratory, in a standard way". It is recommended that some 25 or so toxins from very different sources be selected internationally, and that of these about four should eventually be chosen as giving maximally variable reactions against a number of different antisera in both mice and g. pigs. None which was obviously much "toxoided" or otherwise unsuitable would be chosen. These toxins should be distributed to the testing centres as challenge-toxins, and should all be employed when testing the immune response to a commercial toxoid or vaccine. In parallel one, or a suitable mixture of all, might be distributed as a "standard toxoid".

—ALASTAIR N. WORDEN.

LIU, C. & BANG, F. B. (1950.) **Agglutination of cercariae of *Schistosoma mansoni* by immune sera.**—*Proc. Soc. exp. Biol., N.Y.* **74.** 68-72. [Authors' summary copied *verbatim.*] **753**

The agglutination of living cercariae *Schistosoma mansoni* by immune sera in high dilutions is reported. This reaction which occurs in heat inactivated as well as in fresh serum also appears in the serum of monkeys recently infected with trichina. The agglutinin develops early in the acute infections and was absent in four of seven chronic schistosome infections.

RICE, C. E. & CROWSON, C. N. (1950.) **The interchangeability of the complement components of different animal species. II. In the hemolysis of sheep erythrocytes sensitized with rabbit amboceptor.**—*J. Immunol.* **65.** 201-210. [Authors' summary copied *verbatim.*] **754**

Titrations of the four major complement components in fresh sera from twelve mammalian and two avian species have been made using test reagents prepared from g. pig complement. All seven of the mammalian complements evincing hemolytic activity for sheep red-cells sensitized with rabbit hemolysin, were shown to contain all four components. The five mammalian complements without hemolytic effect on this system contained considerable amounts of C′1, variable amounts of C′3, but no demonstrable C′4. Small amounts of C′2 could be detected in three of these five "non-hemolytic" complements when heated g. pig serum was added to ensure an adequate excess of the heat-stable components, particularly C′4. Owing possibly to species incompatibility, the g. pig test reagents failed to detect any of the four components in chicken or turkey sera which initially had exhibited some hemolytic activity, a presumable indication of the presence of all four.

Studies of the interchangeability of the four components in the complements of the various species showed only those of g. pig, man, and hamster to be mutually compatible, those of the other species replacing each other partially. The C′1 component of the non-hemolytic complements could be substituted for C′1 of g. pig and certain of the other hemolytic complements; their C′2 components were not found to be mutually interactive.

The role of inhibitory substances in reducing or obscuring the activities of components present in low concentration is considered, as is also the practical importance of differences in the lability of various complements in determining titer values of individual components. Fixation of complement due to inter-species antigen-antibody reactions is suggested as one possible source of anti-complementary effects.

See also abstr. **636** (anthrax antiserum); **643-645** and **647-648** (BCG); **646** (TB. vaccination); **649** (Johne's disease); **657** (brucellin, abortin); **658** and **662** (strain 19); **667** (brucellosis); **679** (leptospiral vaccine); **717** (haemagglutination in influenza); **718** (complement fixation in mouse encephalitis); **721-722** (rinderpest); **723** (porcine encephalomyelitis); **726** (contagious hepatitis in dogs); **729-730** and **733-734** (Newcastle disease); **737** (poliomyelitis in chimpanzees); **740** (immunochemical studies); **782** (rabbit papilloma); **785** (immunity reactions and skin-pigment spread); **818** (allergic and non-allergic dermatoses); **898** (report, Medical Research Council); **900** (report, Cyprus); **901** (report, U.S.A.); **905** (book, veterinary medicine).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

PLANK, H. K. (1950.) **Experiments with mamey for pests of man and animals. [The mamey tree—Mammea americana.]**—*Trop. Agric., Trin.* 27. 38-41. 755

It has been shown by P. that various preparations from the mamey tree form a stable and effective insecticide which was, however, not as persistent in action as a 1% D.D.T. suspension when tested against fleas on dogs. The insecticidal effect is due to the presence of substances resembling those found in pyrethrum flowers and these substances are not toxic to dogs and are more quickly lethal to the fleas than D.D.T. The importance of a cheap and locally available insecticide in tropical countries is stressed.—K. G. TOWERS.

ROTH, A. R. & LINDQUIST, A. W. (1950.) **Comparative effectiveness of DDT, methoxychlor, and dichlorodiphenyl dichloroethane residues against house flies and *Aëdes* floodwater mosquitoes.**—*J. econ. Ent.* 42. 871-873. [Authors' summary copied *verbatim.*] 756

At the same dosage rates (20 mg. per square foot) house flies had to be exposed 15 times longer to methoxychlor [an analogue of D.D.T.] than to DDT to achieve a 95% mortality. At varying dosages and exposure times it was found that DDT was approximately 10 times as toxic as methoxychlor. At lower dosages many flies recovered after they were exposed to methoxychlor.

HOFFMAN, R. A., ROTH, A. R. & LINDQUIST, A. W. (1950.) **Effect of air temperature on the insecticidal action of some compounds on the sheep tick and on migration of sheep tick on the animal.**—*J. econ. Ent.* 893-896. [Authors' summary slightly amended.] 757

In laboratory tests many more sheep keds, *Melophagus ovinus* (L.), were killed at 70° F. than at 90° when exposed to wool treated with DDT, methoxychlor, and dichlorodiphenyl dichloroethane. The reverse was true with toxaphene [chlorinated camphene], benzene hexachloride, and chlordan. The sheep tick remains on the skin of sheep at air temperatures of about 35° and below, but may be found a short distance from the skin at higher temperatures. At 80° to 90° many of the ticks are on the outer wool surface. In control of the sheep tick by means of sprays, it is important to take advantage of outward migration of ticks. This can be done by spraying during the warmer seasons of the year.

DUGUET, J. (1949.) **Disinsectization of aircraft. Study made in connexion with the revision of international conventions.**—*Bull. W.H. Org.* 2. 155-191. [Author's conclusions copied *verbatim.*] 758

As a result of this study it seems possible to conclude that: (1) Because of the evident danger constituted by the possible air-transport of insect vectors of disease, it is advisable to obtain strict adherence to the stipulations of Article 54 of the International Sanitary Convention for Aerial Navigation of 1933-1944, which prescribes the disinsectization on departure of all aircraft leaving an infected area; (2) The disinsectization of aircraft, when carried out by the proper means, appears to constitute an effective prophylactic measure against such a danger. It cannot, however, by itself provide an absolute health safeguard; (3) It is therefore imperative, whenever environmental and climatic conditions are favourable, to maintain and develop control measures against mosquitoes in the vicinity of airports open to international air-traffic, in order to eradicate locally all agents which are vectors of malaria, yellow fever or other diseases spread by insects, or at least to limit the likelihood of mosquitoes penerating into aircraft landing or parking on such airfields; (4) Moreover, in accordance with the recommendations of the Expert Committee on Malaria of the World Health Organization, and independently of disinsectization procedures for aircraft, it appears useful, as a supplementary measure, to take steps towards permanent eradication of *Anopheles* from aerodromes and sea bases, in order that mosquitos which might possibly be introduced by aircraft into a territory normally free, or which has been freed, from malaria, cannot find conditions favourable to their development; (5) Although technical means which are at present available for the disinsectization of aircraft offer appreciable health safeguards and can be carried out with reasonable ease, it would be useful if, with the object of improving the methods of dispersing insecticides and of rendering a larger number of insect species susceptible to their action, further research could be undertaken on the following lines: (a) search for effective aerosols against the principle insect species usually encountered in aircraft, and especially against agricultural pests; (b) determination of the duration of the residual insecticidal action of surface DDT applications in commercial aircraft in present use; (c) study of automatic disinsectization procedures applicable to aircraft with

pressurized cabins; (d) drawing up of "standard instructions" for disinsectization, adapted to the different types of aircraft in use on international airlines, and suitable for posting in the interior of the aircraft.

McBride, O. C., Sullivan, W. N. & Fulton, R. A. (1950.) **Treatment of airplanes to prevent the transportation of insects.**—*J. econ. Ent.* **43.** 66-70. [Authors' summary copied *verbatim*.] 759

A study was made on the use of residual and aerosol applications of insecticides, alone and in combination, for freeing aircraft of insects. The formulations found most effective in laboratory studies were tested further in a 1000-cubic-foot room, and applied later to the interior of airplanes.

Of 17 formulations of residual insecticides tested in the laboratory, the best contained 10% of DDT and 5% each of pyrethrum and piperonyl butoxide (G-560), and of 24 aerosol formulations tested the most satisfactory contained 3% of DDT, 5% of pyrethrum, and 2% of piperonyl butoxide (G-571).

The best results in airplanes were obtained with a combination of aerosol and residual treatments. A high mortality of agricultural insects, house flies, and mosquitoes was obtained with a residue of 150 mg. per square foot of G-560 plus 20 grams per 1000 cubic feet of G-571.

Pelloux, A. & Decourt, P. (1949.) Toxicité du S.N.P. sur *Argas persicus*. [**The action of S.N.P. (ó - diethyl - ó - *p* - nitrophenyl thiophosphate, rhodiatox) as a parasiticide on *Argas persicus*.**]—*Bull. Soc. Path. exot.* **42.** 187-190. 760

S.N.P. is 100% toxic to *Argas persicus* in concentrations of a little over 1:1000. The powder is slightly more active than the emulsion, although the latter is more rapid in its effect.—Nesta Dean.

Zimmermann, P. (1950.) Über die Trombidiose (Herbstgrasmilbenbefall) bei den Haustieren. [**Infestation with *Trombicula autumnalis* in domestic animals.**]—*Tierärztl. Umsch.* **5.** 187-190. 761

Z. refers to the biology and geographical distribution of *Trombicula autumnalis*, which has erroneously been named *Leptus autumnalis*. He also includes short descriptions of the clinical and histopathological appearances, diagnosis, treatment, lesions produced and control of the parasite, and also immunity in domestic animals.—M. L. Clarke.

See also abstr. **824, 842** and **843** (insecticides); **900** (report, Cyprus); **906** (book, parasitology).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

Kendall, S. B. (1950.) **Snail hosts of *Fasciola hepatica* in Britain.**—*J. Helminth.* **24.** 63-74. [Author's summary copied *verbatim*.] 762

This paper presents experimental evidence to show that *Limnaea truncatula* is not the only British snail susceptible to infection with *Fasciola hepatica*. Of the six British species of *Limnaea*, five may be infected under laboratory conditions, *L. auricularia* proving resistant to infection. Full development of the parasite occurs in *L. truncatula*, *L. stagnalis*, *L. palustris* and *L. glabra*, while development as far as the production of rediae occurred on one occasion in *L. pereger*. Of the susceptible species *L. truncatula* may be infected at any age or size, but the other species are susceptible only during the first few days after hatching. *F. hepatica* appeared to be relatively pathogenic to hosts other than *L. truncatula* even though the level of infection (as evidenced by the number of rediae which developed) was considerably lower than in the more usual host.

It is concluded that *L. truncatula* is the only important vector of *F. hepatica* in Britain, although other species of *Limnaea* may be expected to act as occasional hosts under field conditions.

Priestley, H. (1950.) **Cysticercus bovis.** [Correspondence.]—*Vet. Rec.* **62.** 569-570. 763

Of 6,617 cattle slaughtered in the abattoir at Blackpool 7·29% were affected with cysticercus bovis.—D. Luke.

Kartsonis, P. L. & Austin, J. A. (1950.) **Anthelin—a new compound for removing tapeworms and roundworms from dogs.**—*J. Amer. vet. med. Ass.* **116.** 301-303. 764

Ten dogs, passing tapeworm segments in their faeces were each given a single dose of anthelin (N-methyltetrahydromethylnicotinate-*p*-carboxyphenylstibonic acid) at the rate of 4·69 mg. per lb., 18 hours after a light meal. Faeces and worms were collected for 24 hours, and the dogs then killed and examined. 697 of 719 tapeworms were removed and 21 of 23 ascarids.

Twice the above dose on three consecutive occasions produced few signs of toxicity.

—GEORGE M. URQUHART.

SCHMIDT-LAMBERG, H. (1950.) Die Trichinose. **[Trichinella infection.]** — *Schweiz. Arch. Tierheilk.* **92.** 131-134. **765**

The author gives a short historical and general review of trichinosis, and stresses three factors of importance to man, namely, there may be 12,000 larvae present in 1 g. of trichinous pork, one adult in a human intestine may produce 10,000 living larvae, and larvae may live in human musculature for 35 years. He refers to some of the European epidemics which have occurred since the condition was first made the subject of scientific study in 1860, up till the end of the second world war, and suggests general control measures.—M. L. CLARKE.

HOERLEIN, B. F. (1950.) **The evaluation of various chemical agents in the treatment of soil infected with larvae of the dog hookworm (Ancylostoma caninum).**—*N. Amer. Vet.* **31.** 253-262. **766**

The literature on chemical agents used on soil infected with helminth larvae is briefly discussed. As a result of 479 tests on artificially and naturally infected soil using a modified Baermann technique it was found that almost complete eradication is effected for several weeks by the application of methyl bromide, 1–2 lb. per 100 sq. feet sprayed under an air-tight cover, and by sodium borate, 5–10 lb. per 100 sq. feet spread on the soil surface. Urea solution and calcium cyanamide, spread on the surface at 7 and 8 lb. per 100 sq. feet respectively, and dichlorpropene, injected in 8 ml. voumes at six-inch intervals, and a five-inch depth, were somewhat less effective. Ethylene dibromide was relatively inert.

Methyl bromide is dangerous to the operator unless precautions are taken, but is very volatile, and not injurious if proper aeration is carried out after fumigation. Calcium cyanamide is rather toxic to dogs when taken internally. Sodium borate is non-toxic.

Ancylostomiasis is reported to have accounted for 29% of 6,000 cases in a small-animal clinic in Alabama.—NESTA DEAN.

CLAPHAM, P. A. (1950.) **On treating and preventing gapeworm disease.**—*J. Helminth.* **24.** 53-60. [Author's conclusions copied *verbatim*.] **767**

Treatment of birds infested with *Syngamus trachea* is not an easy matter. Some considerable success has been achieved among pheasants with barium antimonyl tartrate, but partridges are less satisfactory subjects. Damage to the ocular membranes is prevented by manually blocking the external nares with the substance, which is then inhaled.

Phenothiazine is a useful substance for the prevention of infestation. Complete protection can be expected when it is fed in the mash at the rate of 4%: a very real degree of protection is given by mashes containing 3%, while lower percentages are less useful. It is necessary to have the phenothiazine present when the larvae hatch, for they rapidly pass out of the intestine to safe positions in other organs where they are not readily attacked by chemicals. It is therefore necessary to feed the treated mash immediately before experimental infestations and continuously where the birds are always liable to pick up infestation. This latter system may lead to some reduction in the weight of the bird which will be a distinct disadvantage to poultry farmers. Among pheasants, however, it is perhaps less important. The alternative will often be a dead bird, and even small pheasants are better than none at all. The danger period for infestation in [pheasant—Ed. *V.B.*] poults is the first 10–12 weeks after which some natural resistance develops, though this not so complete as in poultry. Even if older birds become infested, they are generally able to withstand the serious effects and live, though as reservoir hosts they are a source of danger to other birds.

ERHARDT. (1949.) Der Mandelsäureisoamylester („Mandaverm"), ein neues Wurmmittel für die Veterinärmedizin. **[Mandelic isoamyl ester (mandaverm) an anthelmintic.]**—*Tierärztl. Umsch.* **4.** 387-388. **768**

E. states that mandelic isoamyl ester was effective against ascarids in horses, dogs, cats and red and silver foxes. Therapeutic doses were not near the toxic level. No disturbance of general condition, appetite or working power was observed.—R. MARSHALL.

SADUN, E. H. (1950.) **Studies on the pathogenicity in chickens of single infections of variable size with the nematode, *Ascaridia galli*.**—*Poult. Sci.* **29.** 712-722. [Author's summary slightly modified.] **769**

The pathogenicity of *Ascaridia galli* for young chickens was studied by observations of the growth of chickens and of the size of the spleen, thymus and liver relative to the body weight, by determinations of the number of cellular blood elements and by histopathological examination of the intestine, lung, heart, kidney, thymus, spleen and liver.

Infected chickens failed to grow normally. They developed thymic atrophy, a spleno-

megaly and hepatomegaly. Ten days after receiving 14,000 embryonated *Ascaridia* eggs the chickens were found to have a mild anemia and a severe leucocytosis with a marked increase of polymorphonuclear leucocytes with eosinophilic rods and of polymorphonuclear leucocytes with eosinophilic granules (P.E.G.). Twenty days after inoculation, they still had a greater number of P.E.G. than the non-infected controls, but had practically recovered from the other hemocytopoietic changes. In chickens with a severe macrocytic anemia and leucopenia artificially produced by a deficiency in dietary pteroylglutamic acid, a light infection had a partial compensatory effect particularly with regard to the number of leucocytes.

The microscopic examination of chickens killed 10 days after inoculation revealed intestinal and renal damage. Examination of chickens killed 20 days after infection revealed that while the intestinal mucosa had undergone almost complete regeneration, the renal condition was still present.

MADSEN, H. (1949.) *Heterakis gallinarum* **(Schrank, 1788)** *nec Heterakis gallinae* **(Gmelin, 1790).**—*J. Parasit.* **35. 543. 770**

M. stated that Schrank was the first to associate correctly the original description and figure of Goeze (1782) of the common *Heterakis* of poultry under the name *Ascaris gallinarum*. Gmelin appears to have confused Goeze's specimen of *Heterakis* with *Ascaridia galli* (Schrank, 1788) and named it *Ascaris galli*. Furthermore Gmelin's *Ascaris gallinae* does not refer to the *Heterakis* figured by Goeze but to a species of *Ascaridia*. Therefore, on the basis of priority, M. suggests that the correct name for the *Heterakis* of fowls, etc., should be *H. gallinarum* (Schrank, 1788) and not *H. gallinae* (Gmelin, 1790).—FERGUS S. MCCULLOUGH.

HAWKING, F. (1950.) **Some recent work on filariasis.**—*Trans. R. Soc. trop. Med. Hyg.* **44.** 153-192. [Author's summary copied *verbatim*.] **771**

A case of chyluria was studied. Erythrocytes and protein were excreted in the urine mostly during the day time (being related to movement and food); the excretion at night was small. The excretion of microfilariae in the urine was similar, *i.e.*, they occurred in the urine chiefly when many cells and protein were being excreted, rather than at night. When the patient was treated with hetrazan, the number of microfilariae in the urine was greatly diminished, although the excretion of protein and cells was unaffected.

Preliminary therapeutic trials of arsenamide were made in four patients. Intravenous doses of 100 mg. per day were tolerated but not doses of 150 mg. Subsequently the number of microfilariae in the night blood diminished. This compound deserves further investigation.

A brief investigation was made of the "quick antimony" treatment of ALVES and BLAIR, as applied to filariasis; there was no immediate effect upon the microfilaria count, but it deserves further study.

GALLIARD, H. & MILLE, R. (1949.) Essais de traitement de la filariose a *Wuchereria bancrofti* var. *pacifica* par le l-diéthyl carbamyl, 4-méthyl pipérazine, a Tahiti. [*Wuchereria bancrofti* **infection in Tahiti and attempted treatment with l-diethylcarbamyl-4-methylpiperazine.**]—*Bull. Soc. Path. exot.* **42.** 304-313. **772**

The compound, proprietary name "hetrazan", has a rapid action on the microfilaria. Doses of 2 mg. per kg. *per os* three times daily, kill 87% in 2–7 days. The possible value of the compound as a prophylactic agent is also discussed in regard to the high relapse rate.

—MALCOLM WOODBINE.

BUEDING, E. (1949.) **Metabolism of parasitic helminths.**—*Physiol. Rev.* **29.** 195-218. **773**

B. discussed the literature concerned with oxidative, carbohydrate, lipoid and protein metabolism, respiratory enzymes, the resistance of parasitic helminths to digestion, and the effect of anthelmintic agents on the metabolism of parasitic helminths. The metabolism of parasitic worms varies greatly from one species to another; this phenomenon is probably directly related to marked differences in the chemical composition of their various habitats. Hence it seems that generalizations concerning worm metabolism are invalid until the metabolic characteristics of a great many related species are thoroughly investigated. Furthermore, the profound biochemical variations from species to species may influence the degree of resistance of one species to anthelminthic drugs but may not affect another. For this reason the metabolic characteristics of a particular organism against which chemotherapy is directed should be fully investigated, rather than those of related species of greater availability. When the essential metabolic reactions are understood attempts to inhibit such processes may be initiated. B. believed that advances in the field of comparative biochemistry of parasitic helminths (of which a large number are men-

tioned) can form the basis for a more rational approach to the chemotherapy of helminthiasis than the prevailing empirical method of screening large numbers of unrelated compounds in order to evaluate their anthelminthic activity.
—Fergus S. McCullough.

See also abstr. 697 (*Heterakis gallinae*); 753 (*Schistosoma mansoni*); 837-838 (anthelmintics); 899 (report, S. Africa); 900 (report, Cyprus); 906 (book, parasitology).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

Bolle, W. (1950.) Zur Pathologie des tierischen Fetus. **[Lymphoid leucosis in a calf foetus.]**—*Berl. Münch. tierärztl. Wschr.* No. 1. pp. 14-15. 774

Lesions of lymphoid leucosis—multiple foci in the skin, enlarged lymph nodes, local foci in the wall of the abomasum and small intestines and at the base of the heart, with infiltrations in the liver, kidneys, and left orbit—were present in a 4-month foetal calf. No information was obtainable as to whether lesions of leucosis were found in the parents of this calf at slaughter, but neither of them was affected clinically.—E. Cotchin.

Prokůpek, K. (1949.) Příspěvek k poznání leukemie psů. **[Leucaemia in dogs.]**—*Čas. československ. Vet.* 4. 33-41. 775

P. described four cases of leucaemia in dogs, two of which were under observation until their death. In three of the dogs the disease was accompanied by skin lesions in the form of diffuse eczema. In the blood of all four there was an increased number of leucocytes, the majority of which were neutrophile and many of them immature. In two of the dogs there was a protracted myeloid form of the disease.—E.G.

Jennings, A. R. (1949.) **Plasma-cell myelomatosis in the dog.**—*J. comp. Path.* 59. 113-118. 776

An eight-year-old male cross-bred terrier had a large swelling in the submaxillary region, which, when opened, allowed the escape of some thick fluid. A biopsy provided a tentative diagnosis of plasmocytoma. The dog was in poor condition, and anaemic. The intermaxillary space became filled by the enlarging growth, which infiltrated the upper region of the neck. Examination of the urine for Bence-Jones protein yielded indefinite results.

The dog was killed, and P.M. examination revealed, apart from the intermaxillary lesion, an extensive local spread to include the larynx and the submaxillary and superior cervical lymph nodes. The liver was diffusely infiltrated with neoplastic cells, as were the spleen and bone marrow. In the kidney, along with some fibrosis (? chronic interstitial nephritis), there was extensive tubular degeneration, and there were deposits of amyloid in and around the convoluted tubules. No "punched out" bone lesions were seen in radiographs.

It is suggested that the plasmocytoma was multifocal in origin, and probably arose from the reticulo-endothelial system.—E. Cotchin.

Ajello, P. (1949.) Il cosidetto sarcoma di Sticker in sede extragenitale. **[Sticker's sarcoma in dogs.]**—*Nuova Vet.* 25. 333-337; & 405-510. 777

In 191 cases of venereal sarcoma, the author found 14 cases with extragenital lesions. Four of these were unassociated with genital involvement. Spread of the lesions seemed to be by the lympho-haematogenous route, or by accidental transplantation of neoplastic cells when the dogs bit or scratched the lesions.
—I. W. Jennings.

Correia Madeira, A. (1948.) Natureza histológica do sarcoma de Sticker. **[Histology of venereal (Sticker's) sarcoma in dogs.]**—*Rev. Mea. vet., Lisboa.* 43. 299-237. [French summary.] 778

The author examined two cases of Sticker's sarcoma by special staining methods in order to determine whether they were reticulosarcomata or round cell sarcomata; and if the latter, whether they could be classified as lymphoblastic or myeloblastic. He concluded that they were not reticulosarcomata, that they were neither lymphoblastic nor myeloblastic in origin, and that they should be classified as simple small-round-celled sarcomata.
—I. W. Jennings.

Newiadomski, M. M. (1948.) Neue Ergebnisse über die Etiologie der bösartigen Geschwülste. **[The aetiology of malignant tumours.]**—*Acta med. scand.* 130. 317-330. [In German: English conclusions copied *verbatim*.] 779

The fundamental error of method in oncological research is based on the application of the transformism theory, which admits idealistic and vitalistic conceptions for the interpretation of the genesis of tumors. This interpretation is founded not on experimental find-

ings or observation, but on speculative data, a fact which clearly demonstrates the pseudo-scientific character of the transformism theory beginning from Virchow and up to Fisher-Vasels.

Recent investigations of cytologists demonstating the impossibility of changes in the histophysiological properties of body cells, determined in embryogenesis, clearly reveal the non-scientific basis of the theory of malignization of cells by chronic irritation and of the occurrence of precancerous states.

The fact that absolutely specific tumors can be obtained by means of cell free tumor filtrates obviously proves that the mutation theory (transformation of normal cells into neoplastic ones) lacks sound scientific basis.

Viruses are unable to alter the histophysiological properties of cells and to bring about mutation; therefore it becomes necessary to investigate the possibility of formation of a malignant tumor from elementary bodies present in the cellfree tumor filtrate.

As a matter of fact, absolutely specific tumors can be obtained from the cell free tumor filtrates; this suggests that the true agents of tumors are elementary bodies.

On the basis of the above mentioned data, the hypothesis suggesting that tumor cells derive from elementary bodies—the true agents of tumors—can be considered as fully justified.

SCHARRER, B. & LOCHHEAD, M. S. (1950.) **Tumors in the invertebrates: a review.**—*Cancer Res.* **10.** 403-419. [Authors' summary copied *verbatim*.] **780**

Phenomena related to neoplastic growth have been studied in a number of invertebrate phyla, and tumors of either epithelial or connective tissue origin have been reported in annelids, sipunculids, arthropods, molluscs, and ascidians. Evidence of the true neoplastic character of such alleged tumors is often scanty; reasonably convincing signs of malignancy are found only in a small number of reported cases.

A number of tumors described in representatives from various invertebrate groups may be classified as spontaneous growths, since their cause is unknown. In insects certain of the alleged tumors are known to be hereditary. Other factors reported to cause tumors or abnormal growths in invertebrates are parasites, endocrine imbalance and disturbance, of innervation. Carcinogens have been tried on a variety of invertebrates and have been reported to cause tumors only in molluscs. X-rays in suitable dosage are known to cause tumor-like growths or increase their incidence in insects (Drosophila).

SYVERTON, J. T., DASCOMB, H. E., KOOMEN, J., JR., WELLS, E. B. & BERRY, G. P. (1950.) **The virus-induced papilloma-to-carcinoma sequence. I. The growth pattern in natural and experimental infections.**—*Cancer Res.* **10.** 379-384. [Authors' summary slightly modified.] **781**

A study was made of the growth pattern of naturally and experimentally induced papillomas on 594 rabbits kept for from several months to several years, without interference with the natural sequence of tissue changes. The growth cycle of the virus-induced lesions fell into three phases: proliferative, stationary and involutionary. The termination of the natural growth pattern, which resulted in the regression and disappearance of the lesions or in malignancy followed by the death of the host, seldom occurred until after the lesions had been under observation for six months or longer. The employment of both domestic and cottontail rabbits showed that the rabbit host did not alter the immediate pathogenicity of the virus or of the tumor's growth pattern. A difference in host reactivity, however, was indicated by the early disappearance of the virus from domestic rabbit papillomas and by a somewhat decreased incidence of cancer in the cottontail rabbits.

SYVERTON, J. T., WELLS, E. B., KOOMEN, J., JR., DASCOMB, H. E. & BERRY, G. P. (1950.) **The virus-induced rabbit papilloma-to-carcinoma sequence. III. Immunological tests for papilloma virus in cottontail carcinomas.**—*Cancer Res.* **10.** 474-482. [Authors' summary copied *verbatim*.] **782**

Studies were designed to elucidate the relationship of Shope's papilloma virus to the carcinoma that often develops when rabbits have long carried virus-induced papillomas. Carcinomatous materials from western cottontail rabbits were tested for the presence of virus by utilizing eastern cottontails as test animals, because it is the rule to recover papilloma virus from papillomas on this species of host. There were available for study 106 cancers removed from 26 cottontails. For a single experiment mixed carcinomatous material from many hosts was employed, and for each of three experiments the carcinomatous material utilized came from single animals.

It was found that the transfer of carcinomatous material to normal animals did not result in an increased resistance to papilloma

virus, nor did serums from these animals acquire neutralizing capacity for papilloma virus. One of the cottontails provided eight lesions for investigation: primary cancers at four sites, metastatic cancers in three lymph nodes, and a single benign papilloma. Papilloma virus was recovered from the papilloma, and a high degree of immunity resulted in the recipient test animals that received tissue, but none of the cancers from the same animal yielded evidence for the presence of papilloma virus.

HESTON, W. E., DERINGER, M. K., DUNN, T. B. & LEVILLAIN, W. D. (1950.) **Factors in the development of spontaneous mammary gland tumors in agent-free strain C_3Hb mice.**—*J. Nat. Cancer Inst.* **10.** 1139-1151. [Authors' summary copied *verbatim*.] **783**

From a litter of high-tumor strain C_3H mice born by cesarean section and foster nursed upon a low-tumor strain C57 black female, a strain designated as C_3Hb and deprived of the mammary tumor-agent has been developed. Of 188 C_3Hb females from the first five generations that have been bred intensively, 38% have developed mammary-gland tumors at an average age of 20·3 months.

Greater histologic variation occurred in these mammary tumors from the C_3Hb females without the agent than is encountered in tumors from C_3H females with the agent. The increase in keratinized tumors was especially significant.

By the removal of the mammary tumor-agent the effect that breeding has upon the chance that a female of strain C_3H will develop a mammary tumor becomes much more discernible. The incidence of mammary tumors in virgin C_3Hb females was less than 5% as compared with 38% in the breeding females. An incidence of from 95 to 100% occurs in both the breeding and virgin C_3H females with the agent.

Progeny of tumor-bearing females did not segregate as high-tumor lines in the colony as might be expected if the mammary tumor-agent were involved. Tests for the presence of the agent in cell-free filtrates of 24 of the tumors from the C_3Hb females have all been negative, although all comparable tests of mammary tumors from C_3H females have been positive.

It was concluded that other factors such as the genotype of the line and the intensive breeding were strong enough to result in a relatively high incidence of mammary tumors in the C_3Hb females in the absence of the mammary tumor agent.

EICHWALD, E. J., EVANS, R. G. & BROWNING, G. B. (1950.) **The significance of the anterior chamber in tumor transplantation. I. Transplantation of mouse neuroblastoma C1300 to homologous hosts.**—*Cancer Res.* **10.** 483-485. [Authors' summary slightly modified.] **784**

Mouse neuroblastoma C1300 was transplanted into the anterior chamber of 166 female mice of the C57 brown strain, and subcutaneously into 161. Comparable numbers of mice of each group were killed serially, and the incidence of tumor growth was compared.

Tumor growth was significantly more frequent in mice in which the tumor had been transplanted to the anterior chamber. The tumor grew both within and beyond the anterior chamber. Progressive tumor growth was significantly more frequent in mice with inoculations into the anterior chamber than in subcutaneously inoculated animals. Gross metastases were not observed in these mice following tumor transplantation to the anterior chamber, in contrast to mice of the ABC strain in which this event almost invariably occurs following transplantation of this tumor to the anterior chamber.

BILLINGHAM, R. E. & MEDAWAR, P. B. (1950.) **Pigment spread in mammalian skin: serial propagation and immunity reactions.**—*Heredity*. **4.** 141-164. [Authors' summary copied *verbatim*.] **785**

The phenomenon of pigment spread in spotted g. pigs has been the subject of a further investigation. Red pigmentation is found to spread into white skins more slowly than black pigmentation, and black pigmentation encroaches upon red skin more slowly still. Different degrees of attenuation of the pigmentary factors, and competition between different but closely related pigmentary systems, may be responsible for these differences of rate. When red skin is transformed into black, the red dendritic cells are apparently transformed into black dendritic cells. Pigmentation may be initiated in one g. pig by foreign pigmentary dendritic cells transplanted in very low dosage from another, and may thereafter be serially propagated from animal to animal. New techniques have been devised to bring this about: the "grafting" of dilute suspensions of epidermal cells in Ringer's solution to recipient areas cut to such a depth that the transplanted cells are given direct access to the bases of the hair follicles.

Once started, pigmentation of foreign origin increases in area by pigment spread, and

in a high proportion of animals it may persist for long periods or perhaps indefinitely. Such pigmentation may at any time be bleached out by transplanting a small immunizing graft from the g. pig, whose cells initiated the pigmentation to the recipient in which it is spreading.

The quantitative and experimental analysis of these phenomena seems to show that pigment spread is caused by a serially propagable transformation of non-pigmentary into pigmentary dendritic cells by a cytoplasmic ingredient of the latter which is capable of behaving "infectively". The transformation has not yet been brought about by cell-free extracts, possibly because the infective agent is physically associated with the melanin granules themselves.

DURAN-REYNALS, F. (1950.) **The significance of the non-neoplastic lesions induced in the central nervous system of ducklings by the virus of a duck variant of the Rous sarcoma.** —*Yale. J. Biol. Med.* **22.** 555-564. [Author's summary slightly amended.] **786**

The virus of a duck variant of the Rous sarcoma of chickens, strain 14 (d) 7, was found to be endowed with the property, unique in tumor viruses, of inducing lesions in the vessels of the central nervous system of young ducks—never in older individuals—when circulating in the blood stream. This contrasts with the behaviour of the original Rous virus which never affects the central nervous system under the same conditions. Grossly, these lesions in ducklings were always hemorrhagic. Microscopically, some of them showed in addition to hemorrhage pronounced changes in the vessel walls consisting of medial necrosis together with intimal and adventitial proliferation or massive necrosis of the entire wall, the whole process being very similar to that observed in infection by ordinary viruses. On the other hand, a few of the proliferative lesions evolved into minute foci consisting of cells very much resembling sarcoma cells.

The virus of the duck variant injected intracranially into ducklings induced only minimal vascular lesions; by considerably increasing the amount of the inoculum it sometimes induced sarcomas in the meninges, mostly arising from vessels. In contrast with this, the original Rous virus similarly injected into chicks induced sarcomas almost constantly.

STUBBS, E. L. (1950.) **Staphylococci injections in chicken sarcoma.**—*Vet. Ext. Quart. Univ. Pa.* **51.** 15-23. [Author's summary slightly amended.] **787**

Attempts were made to use a pathogenic *Staphylococcus aureus* to control fowl sarcoma, Strain 13. The tumor was transferred to chickens [age not stated] and the tumor growth was treated by the injection of staphylococci cultures. The culture material was injected intravenously in some chickens with tumors, and in others locally, directly into the growing tumor. Some of the chickens were carrying two produced tumors, of which one was treated, the other left untreated. Most of the tumors grew progressively and the chickens died or were killed in advanced tumor cachexia. No evidence was obtained that the pathogenic staphylococcus had any beneficial effect on the inhibition or regression of fowl sarcoma, Strain 13.

WILSON, J. E. (1950.) **Control and prevention of neurolymphomatosis (fowl paralysis).** —*Brit. vet. J.* **106.** 196-200. **788**

This paper presents a brief survey of existing knowledge concerning neurolymphomatosis (fowl paralysis).—D. LUKE.

NUTRITIONAL AND METABOLIC DISORDERS

PETERS, J. P. (1949.) **Diagnostic significance of electrolyte disturbances.**—*Bull. N.Y. Acad. Med.* **25.** 749-763. **789**

A general discussion of electrolyte and water metabolism with particular reference to disturbances of sodium and potassium concentration.—W. R. BETT.

SCHENK, P. (1949.) Sind die Rinder Vegetarier ? **[Are cattle vegetarians ?]**—*Dtsch. tierärztl. Wschr.* **56.** 186-189. **790**

A description by a medical man of his observations on grazing by cattle on a day in mid-August. The arthropod and other fauna observed on a pasture are recorded, and it is contended that grazing cattle ingest many thousands of insects or other animal species daily, and may thereby obtain significant quantities of essential amino acids.

Literature on the existence, in arthropods and in lower invertebrate orders, of amino acids and other metabolites demonstrated in essential physiological mechanisms in mammalia is discussed.—ALASTAIR N. WORDEN.

FRANKLIN, M. C. (1950.) **The influence of diet on dental development in the sheep.**—*Bull. Comm. sci. industr. Res. Aus.* No. 252. pp. 34. [Author's summary slightly modified.] 791

The dental development of weaners fed on cereal roughages and grains and their by-products was affected in the following ways: (a) Eruption of incisors was retarded and in extreme cases there was complete absence of permanent incisors at maturing; (b) Through failure of the mandible to develop normally, overcrowding occurred in many instances; (c) Associated with the overcrowding, permanent incisors erupted at abnormal angles; (d) Molar development was affected. Overgrowth, with undergrowth of the corresponding teeth in the upper or lower jaw respectively, was a comon occurrence. Impaction of the third molar was frequent, due to failure of the mandible to elongate normally; (e) Many cases equivalent to undershot jaws, due to the angle at which the incisors erupted, were observed; (f) In many respects the molar and incisor defects were similar to those seen in chronic fluorosis. Accurate differentiation was possible by chemical analysis of the teeth, those from animals affected by fluorosis containinw up to eleven times normal fluorine values; (g) The body weight and the age of the sheep when feeding on the cereal ration commenced were important factors affecting subsequent dental development. The plane of nutrition was also important. When associated with low calcium-intake or calcium-phosphorus imbalance, a high plane of nutrition had more serious effects on dentition than a low plane.

Correcting the calcium deficiency and calcium-phosphorus imbalance of cereal rations by the addition of a suitable calcium supplement such as ground limestone prevented abnormal dental development in the majority of experimental animals. Ground limestone given at a 1·0% level in the ration was more effective than a similar quantity of sterilized bone-meal. Fineness of grinding of the limestone appeared to be important. Isolated instances occurred in which the mineral supplement failed to prevent dental abnormalities and this appeared to be closely related to the inability of the individual to utilize the mineral supplement. There was a very close correlation between the blood-calcium level and the degree of dental irregularity.

Dental development of weaners fed from five to eight months on the cereal rations without a suitable mineral supplement, but fed thereafter on a well-balanced ration, was permanently affected.

The teeth of lambs from ewes fed on the calcium-deficient ration did not appear to be adversely affected provided their mineral intake was adequate after weaning.

The significance of the experimental results in relation to the occurrence of "undershot" jaws in stud sheep and to abnormal incisor and molar development in the field is briefly discussed. Reference is also made to field observations on dental irregularities in sheep.

MORRIS, R. H. (1950.) **Nutritional requirements of the domestic fowl.**—*J. Agric. W. Aust.* **27.** 39-114. 792

A comprehensive review not only of nutritional requirements and deficiency diseases, but also of various systems of feeding, the anatomy and physiology of the digestive system, the use of particular ration components and the more common forms of poisoning to which fowls are subject.

—P. H. HERBERT.

WATERS, N. F., GROSCHKE, A. C. & SCOTT, H. M. (1950.) **Influence of diet on early mortality among inbred lines of chickens.**—*Poult. Sci.* **29.** 685-691. [Authors' summary copied *verbatim*.] 793

The object of this study was to determine what effect modifications in the diet fed to five different inbred lines of chickens would have on mortality during the early post-hatching period.

The results indicate that in certain inbred lines, mortality for the first 21 days after hatching is markedly influenced by the type of diet fed during this period. The reasons for these differences are genetic in nature.

Differences in mineral content of the diet significantly influenced early chick mortality. Changes in fiber content had no pronounced effect on mortality but did influence growth to eight weeks of age.

HOGAN, A. G., O'DELL, B. L. & WHITLEY, J. R. (1950.) **Maternal nutrition and hydrocephalus in newborn rats.**—*Proc. Soc. exp. Biol., N.Y.* **74.** 293-296. 794

A preliminary observation that rats on low folic acid diets were more prone to hydrocephalus when soya bean oil meal was used as the protein source was not confirmed. The incidence on both casein and soya bean diets was less than 1%. When folic acid antagonist was added to the latter diet the incidence rose to about 20%.—P. H. HERBERT.

RICHET, C. & DELBARRE, F. (1949.) Les Anti-Aliments. [**"Anti-Aliments" (Factors preventing utilization of dietary essentials.)**]—*Rev. Path. comp.* **49.** 566-576. [English and Spanish summaries.] **795**

The authors discussed certain factors which hinder normal metabolic processes [see also Richet *V.B.* **19.** 163.]. The anti-vitamins are dealt with in some detail, including those substances antagonistic to vitamin B_1, pantothenic acid and vitamin C. There are substances also which prevent the use of certain amino acids necessary to micro-organisms. Both these anti-amino acids and the anti-vitamins have molecular structures similar to the amino acids and vitamins respectively concerned and a very slight change in the structure of the molecule may be brought about for example by a cooking process or in the intestine. The physiological functions of methionine and the conditions in which it may combine with substances which inhibit its normal role are discussed.

In conclusion, the authors ask whether we should not modify certain food stuffs to eliminate these unhelpful factors, for example to remove from the diet sorrel and rhubarb, more harmful than nutritious; turnips and swedes containing too much cellulose; and to recommend the taking of not more than prescribed quantities of vitamins only if such treatment is really needed.—E.M.J.

RANDOLPH, T. G. & ROLLINS, J. P. (1950.) **Allergic reactions from the ingestion or intravenous injection of cane sugar (sucrose).**—*J. Lab. clin. Med.* **36.** 242-248. [Authors' summary modified.] **796**

Cane sensitivity exists as a cause of chronic allergic symptoms in certain patients found to have a wide base of food allergy reactions.

Sensitivity to cane may be the cause of any type of clinical allergic response but is commonly responsible for a group of symptoms referred to as the fatigue syndrome of allergic origin.

Whether cane sensitivity is related to the presence in cane sugar of immunologically specific polysaccharides requires further study.

The intravenous injection of invert sugar of cane origin causes allergic responses in many cane-sensitive patients.

WHEELER, R. S. & HOFFMANN, E. (1948.) **Influence of quantitative thyroprotein treatment of hens on length of incubation period and thyroid size of chicks.**—*Endocrinology.* **43.** 430-439. **797**

Chicks from New Hampshire hens fed iodinated casein at a rate of 0·02–0·08% of the diet hatched later and had heavier thyroid glands than controls. The delay in hatching was proportional to the level of hormone fed.

—P. H. HERBERT.

SAUNDERS, B. G., BROWN, S. O. & COUCH, J. R. (1950.) **A feathering syndrome in chicks after feeding optimal levels of lysine in absence of arginine.**—*Proc. Soc. exp. Biol., N.Y.* **74.** 114-117. [Authors' summary copied *verbatim*.] **798**

The addition of lysine to a chick diet deficient in lysine, arginine, and methionine caused an abnormal feathering which was characterized by curved and degenerate feathers. A detailed description of the feathering abnormalities is given. When arginine was added, along with the lysine, the feathering of the birds was normal. The addition of the lysine without arginine apparently created a severe deficiency or imbalance of the latter amino acid which resulted in the abnormal feathering.

GILLIS, M. B. (1950.) **Further studies on the role of potassium in growth and bone formation.**—*J. Nutrit.* **42.** 45-57. [Author's summary copied *verbatim*.] **799**

In these experiments chicks required 0·2% potassium in an otherwise adequate diet for a maximum rate of growth during the first four weeks of life. It appears, however, that due to an interrelationship in the metabolism of potassium and phosphorus, the requirement for potassium was increased to as much as 0·24% when the phosphorus content of the diet was suboptimum.

Bone calcification, as measured by the per cent of bone ash, was significantly influenced by the amount of potassium in the diet. It appears that diets containing inadequate potassium resulted in reduced calcification due to a disturbance in phosphorus metabolism. Under such conditions the inorganic phosphorus in blood plasma was significantly reduced, while there was no measurable effect on calcium in the plasma. The amount of potassium required for optimum calcification was less in the presence of an adequate intake of phosphorus than when the phosphorus allowance was suboptimum.

Potassium was also concerned in the economy of feed utilization, the maximum feed efficiency being obtained with amounts of potassium which were approximately optimum for growth.

Contrary to results reported with certain other species, potassium deficiency was easily

produced in chicks receiving adequate amounts of biotin. Supplementary biotin in amounts ten times the ordinary requirement, administered orally or by injection, was without effect on the development or remission of symptoms of potassium deficiency in chicks.

Results obtained with rats confirmed the effect of phosphorus on the potassium requirement for growth and bone calcification as observed in chicks. The potassium requirement of the rats in these studies was approximately 0·16% of the diet. The amount of phosphorus required for maximum bone calcification in the rat was greatly in excess of the amount required for normal growth.

OLSSON, N. (1949.) **Investigations on the vitamin D requirements of chicks, poults, ducklings and goslings.**—*Kgl. Lantbrukshögsk. Ann.* **16.** pp. 1-38. [In English.] **800**

Experiments were reported in which the vitamin D requirements, assessed by radiological examination of the tarso-metatarsal joints, were re-examined. The age of the birds and calcium and phosphorus contents of the diets are given below in brackets. The vitamin D (per kg. food) requirements were: White Leghorn chicks (second and third weeks: Ca = 1·65%, P = 0·7%) 250–300 chick units; Rhode Island Red chicks about 2·7 times higher; White Holland poults (first to fourth weeks: Ca = 1·5%, P = 0·72%) 700–800 chick units; Peking ducklings (3–17 days: Ca = 1·6–2·0%, P = 0·8–1%) 800 chick units; White Italian goslings (0–18 days: Ca = 2·0%, P = 1%) 300 chick units. All birds were cage-reared in the absence of anti-rachitic light. Calcification of the joint was complete at eight weeks in geese and ducks and at 16–24 weeks in chickens and turkeys. Experiments are also reported of the relative potencies of calciferol and vitamin D_3. One chick unit (the potency of 0·01 γ crystalline D_3) was found to be about eight times more effective than one I.U. of vitamin D_2 for White Leghorn chicks.—P. H. HERBERT.

BRATZLER, J. W., LOOSLI, J. K., KRUKOVSKY, V. N. & MAYNARD, L. A. (1950.) **Effect of the dietary level of tocopherols on their metabolism in swine.**—*J. Nutrit.* **42.** 59-69. [Authors' summary copied *verbatim*.] **801**

Five barrows [young castrated male pigs —Ed. *V.B.*], placed on experiment immediately after weaning, were maintained on a vitamin E-low, purified ration for 75 days. Two animals served as controls and three received a supplement of a concentrate of mixed tocopherols at levels of 2·87, 55·12 and 110·2 mg. daily per kilogram live weight. When slaughtered, organs, tissues, body fats, and blood were obtained and analyzed for total and γ- plus δ-tocopherol contents, using the intermediate step of molecular distillation. Tocopherol supplementation increased significantly the total tocopherol content in all cases studied, while it increased the γ- plus δ-tocopherol content significantly only in the case of whole blood. Zero values were obtained for blood plasma from the control animals, as contrasted with values of 84 and 90 μg/100 ml. for whole blood. Tocopherol supplementation markedly affected the fatty acid composition of the body fats by increasing the percentage of oleic acid at the expense of the saturated fatty acids.

TOBIN, C. E. (1950.) **Effects of vitamin E deficiency and cod liver oil on myopathy in mice.**—*Arch. Path.* **50.** 385-392. [Author's summary copied *verbatim*.] **802**

Increased incidence of myopathy and paralysis was produced in mice by raising the level of cod liver oil in tocopherol-deficient diets from 2 to 10 or 20%.

The amount of acid-fast pigment observed in the various tissues was roughly proportional to the precentage of cod liver oil in the diets and the length of time the diets were fed.

The decreased survival time of the litters indicated that the higher levels of cod liver oil were injurious.

No changes were observed in the spinal cord or in the germinal epithelium of the testes.

Tocopherol therapy increased the survival time of the litters and prevented the paralysis, muscular necrosis, and changes in other tissues.

MANN, F. D., MANN, J. D. & BOLLMAN, J. L. (1950.) **The coagulation defect of vitamin K deficiency compared with that caused by dicumarol.**—*J. Lab. clin. Med.* **36.** 234-237. [Authors' summary copied *verbatim*.] **803**

Under essentially comparable experimental conditions, Dicumarol decreased co-thromboplastin activity much more than prothrombin, while vitamin K deficiency produced a greater decrease in prothrombin than in co-thromboplastin.

MEUNIER, P. (1949.) Du dicoumarol aux anti-vitamines K artificielles. **[Dicumarol and synthetic anti-vitamins K.]**—*Brit. J. Nutrit.* **2.** 396-400. [In French.] **804**

A short descriptive account of the relations between dicoumarol and the antagonistic synthetic analogues of vitamin K.

—MALCOLM WOODBINE.

SUNDE, M. L., CRAVENS, W. W., ELVEHJEM, C. A. & HALPIN, J. G. (1950.) **The effect of folic acid on embryonic development of the domestic fowl.**—*Poult. Sci.* 29. 696-702. [Authors' summary copied *verbatim.*] 805

The effect of a folic acid deficiency in the hen's diet on embryonic development is presented. A more acute deficiency may be produced when sucrose serves as the carbohydrate instead of dextrin. Laying birds fed the diet containing dextrin for thirty weeks showed a decline in egg production and hatchability but not in body weight.

A deficiency of folic acid in the hen's diet results in a high incidence of embryonic deaths on about the twentieth day of development. Such embryos appear normal but die soon after pipping the air cell. Some embryos from severely depleted hens exhibited a marked bending of the tibiotarsus. Other less frequently observed symptoms were syndactyly, deformed mandibles and parrot beak. The injection of five micrograms or more of folic acid into the egg prior to incubation resulted in a marked increase in hatchability. Hatchability was also markedly improved by injecting folic acid as late as the seventeenth day of incubation. Livability of the chicks when placed on a folic acid deficient ration was low unless fifteen micrograms or more of the vitamin was injected and unless the injection was made prior to the fourth day of incubation.

DAVIS, V. E., MACVICAR, R., ROSS, C. B., WHITEHAIR, C. K., HEIDEBRECHT, A. A., BRAUDE, R., COATES, M. E., HENRY, K. M., KON, S. K., THOMPSON, S. Y. & WILBY, F. (1950.) **Riboflavin of sow's milk. [Correspondence.]**—*Nature, Lond.* 165. 522-523. 806

Discrepancies between the values for riboflavin of sow's milk and colostrum obtained by two groups of workers have been resolved. Low values reported were the result of incomplete extraction with methanol. This gives adequate chemical values in cow's milk; riboflavin is therefore presumably present in sow's milk in a different form. When a direct measurement, omitting extraction, was made on sow's milk the chemical value was considerably higher and by the method of Bessey approached the value obtained by microbiological and biological assays. This value was similar to that found with cow's milk.—P. H. HERBERT.

MURRAY, P. D. F. & KODICEK, E. (1949.) **Bones, muscles and vitamin C. 1. The effects of a partial deficiency of vitamin C on the repair of bone and muscle in guinea-pigs.** —*J. Anat.* 83. 158-174. 807

The observations recorded were made during the course of an investigation, which had negative results, of the alleged reopening of old healed fractures in prolonged vitamin C insufficiency. The initial weights of the g. pigs were usually between 200 and 400 g., and the basal diet was composed of oatmeal, bran, dried yeast and salt mixture, with vitamins A and D and sufficient vitamin C to prevent obvious scurvy and death. Fractures were inflicted under ether anaethesia with forceps. The fibula was selected for fracture since the tibia formed an effective splint, while there was usually good apposition of the ends.

The main conclusions may be summarized as follows. In partial deficiency of vitamin C, the formation of callus was slower, and the amount of callus less, than in dietetically normal controls. Whereas later the callus in the deficient animals sometimes became extensive, it did not consolidate into compact bone but remained a lightly built trabecular structure. In a large proportion of the deficient animals, the knees became stiff, and could be bent only painfully and with difficulty. There was evidence that the muscles of the deficient animals were more liable to injury than those of normal animals.—ALASTAIR N. WORDEN.

BREIREM, K., ENDER, F., HALSE, K. & SLAGSVOLD, L. (1949.) **Experiments on hypomagnesemia and ketosis in dairy cows.** —*Acta agric., Suecana.* 3. 89-120. [In English.] 808

Low blood magnesium levels and ketosis were produced by restricted feeding of diets low in magnesium. In a spontaneous outbreak of ketosis (50–60% incidence) mineral supplements of sodium chloride, calcium phosphate, copper or cobalt did not reduce the incidence.

—P. H. HERBERT.

DISEASES, GENERAL

EVANS, R. J. & SPOONER, E. T. C. (1950.) **A possible mode of transfer of infection by syringes used for mass inoculation.**—*Brit. med. J.* July 22nd. 185-188. 809

The authors have shown that the mass inoculaton technique using a common syringe and changing the needle after each inoculation is not without its dangers. Using this technique it was found that when syringes used for the inoculation of sterile broth into mice in-

fected with pneumococci were subsequently used for the inoculation of normal mice after needle change, infection of the normal mice often resulted. Even the dipping of a needle into a bacterial culture, changing the needle, and with the fresh sterile needle drawing up sterile broth resulted in such broth becoming infected.

The flow back of bacteria into the barrel is attributed partly to hydrostatic pressure in the animal's body, and partly to slight plunger movements, but the authors consider that it is more likely to be due to withdrawal of the nozzle of the syringe from the socket of the needle. The slight negative pressure that results causes a back flow of fluid from the lumen of the needle and so contaminates the point of the syringe nozzle.—James H. Hale.

Biggers, J. D., Ingram, P. L. & Murray, C. B. (1949.) **Studies on equine purpura haemorrhagica. Article No. 4 Haematology.** —*Brit. Vet. J.* **105.** 191-200. **810**

The following estimations were made on the blood of three horses: erythrocyte count, packed cell volume, viscosity, haemoglobin, total and differential leucocyte counts and platelet and reticulocyte counts. Clot retraction time was also studied.

The authors concluded that: (1) The disease is a non-thrombocytopenic purpura probably associated with a normal coagulation mechanism. (2) Although the disease is commonly associated with anaemia, there is periodic haemoconcentration. (3) Death may occur during anaemia or a period of haemoconcentration. (4) There is a concurrent neutrophilia and eosinopenia.—L. M. Markson.

Mose, N. M. (1949.) Epifysebrud eller Epifyseløsning af Femur hos Hesten. **[Fracture of the epiphysis of the femur in horses.]** —*Nord. Vet.-Med.* **1.** 685-702. [Abst. from English summary.] **811**

This condition is described as the most frequent form of femoral fracture in the horse. The author describes the surgical anatomy and elaborates the predisposing and exciting aetiological factors.—E. F. Lewis.

Arnold, J. P. (1950.) **Anatomy and pathology of the bovine teat.**—*J. Amer. vet. med. Ass.* **116.** 112-116. **812**

A short discussion of the literature concerning the normal teat and the prevalence of lesions is given, followed by the author's findings in a series of 702 specimens obtained from abattoirs. Lesions of the lactiferous duct (teat canal) were always present if its smallest circumference was proximal. An average of 70% of cattle had pockets formed by folds of mucous membrane. External injury was present in 7·5% of all teats and papillomas on 11·2%. A note is made of a condition of "plaques" on the skin of 59% of all teats. Internal lesions in the lactiferous duct ranged from haemorrhage in the wall to complete stenosis. The teat sinus was completely occluded in 1·1%; 1·4% had diffuse changes in this region and of these 75% were known to be from udders affected by mastitis.

—R. N. Smith.

Stamp, J. T., McEwen, A D., Watt, J. A. A. & Nisbet, D. I. (1950.) **Enzootic abortion in ewes. I. Transmission of the disease. [Possible rickettsial infection.]**—*Vet. Rec.* **62.** 251-254. **813**

A type of abortion which occurs on tick-free pastures in south-east Scotland was studied. Incidence varies from 5% to 30% in infected flocks, the higher incidences being in recently infected flocks. As a rule ewes abort once only, subsequent pregnancies being normal. Apart from abortion or premature lambing there are no striking clinical signs. Cultural examination of aborted foetuses has been negative and no organism has been recognized in smears from foetal stomach and intestinal contents; inclusion bodies have not been found in foetal tissues.

Material from aborted foetuses was obtained in Feb. and March 1949 and stored at −70° C. Spleen, kidney, liver, lung and stomach contents were mixed and ground into a smooth paste. A centrifuged and filtered suspension of this was inoculated into pregnant ewes from an area believed to be free from the disease; in all 108 ewes were inoculated either with filtered or unfiltered material. Abortions commenced in April in those ewes which had received the unfiltered material.

The aborted foetuses and the foetal membranes had the changes characteristic of the disease as seen in natural outbreaks; these changes are described and illustrated. The gross appearance of diseased foetal membranes resembled that of bovine foetal membranes infected with *Brucella abortus*. Smears made from diseased cotyledons and stained with dilute Ziehl-Neelsen stain had large numbers of minute organisms which could also be stained with Macchiavello, Castaneda and Giemsa stains. The morphology of these organisms is described; they were readily cultivated when inoculated into the yolk sac of chick embryos.

Transmission experiments to sheep, g. pigs, mice, rats, calves and a cow using material from infected chick embryos are described. These organisms or elementary bodies are considered to be the cause of the disease; no definite opinion is expressed by the authors as to their classification. Further investigation is required to determine whether most of the outbreaks of abortion in sheep in south-east Scotland are caused by this infection.—M.C.

NAFTALIN, J. M. & HOWIE, J. W. (1949.) **Hepatic changes in young pigs reared in a cold and damp environment.**—*J. Path. Bact.* **61.** 319-328. **814**

Of 30 pigs reared from three days of age in an open pen in a cold, damp and draughty shed with an uninsulated concrete floor, 16 died within 15 weeks. Of 21 pigs reared in a warm, dry, wooden ark hut, with an indoor run to a pen in the same shed as the previous group, five died. Of 16 pigs, reared in a similar wooden ark hut, but with an outdoor run, on concrete, in which the conditions varied with the weather, all remained healthy. All the piglets were given 1·0 g. of reduced iron by mouth on the 3rd, 10th and 17th days, and there were no significant differences between the haemoglobin levels in the different groups at three weeks of age.

The pigs in the first group refused solid food offered from about the 17th day of life, and became listless and apathetic, and lay huddled together seeking warmth. After three weeks, there was a great variability in growth rate, there was humping of the back, and abdominal distension by ascitic fluid and they were unthrifty; and intermittent diarrhoea was common.

The lobules were enlarged, and the "nutmeg liver" appearance was demonstrable. Histological findings were: vascular congestion, with distended sinusoids; escape of red blood cells into the tissue spaces, the sinusoids being dilated but empty of red cells; ischaemic areas with closed sinusoids and swollen liver cells; fatty change; vacuolation; loss of staining affinity; fragmentation of columns of liver cells and necrosis of individual cells; fibrosis. The bone marrow, examined in three pigs, was not found to be hyperplastic.

The condition was essentially identical with that described by MCGOWAN (1924) and attributed by him to iron-deficiency anaemia. However, it could not be prevented by giving the young animals large doses of iron, but it could be prevented by giving in addition a warm, dry, comfortable environment.

The liver lesions were attributed to the direct effect of the cold surfaces on the abdomen. —E. COTCHIN.

HSUING, G.-D., EADS, F. E. & STAFSETH, H. J. (1950.) **Penicillin ointment in the treatment of conjunctivitis in dogs.**—*Cornell Vet.* **40.** 4-10. **815**

Penicillin ointment (14,300 units per g.) was applied once daily to the eyes of 21 dogs with either serous or muco-purulent conjunctivitis. A table is given showing the bacteriological findings in 11 of the dogs before and during treatment. There was a 75% recovery rate and application of the ointment once daily was considered satisfactory.—K. G. TOWERS.

SPÖRRI, H. (1948.) Zur Physiopathologie der Oedementstehung. **[Physio-pathology of oedema.]** — *Tierärztl. Umsch.* **3.** 238-242. **816**

A discussion on the pathogenesis of oedema.—E. COTCHIN.

WATERS, L. L. & DESUTO-NAGY, G. I. (1950.) **Circulatory factors in the pathogenesis of experimental arteriolar necrosis.**—*Yale J. Biol. Med.* **22.** 751-766. [Authors' summary copied *verbatim*.] **817**

The same arteriolar lesions and similar changes in venous circulatory dynamics are described in three types of experimental procedures, each of which leads to arteriolar necroses in the dog. The experimental procedures include: (1) injections of large amounts of adrenalin, (2) rapid intravenous injection of large volumes of blood, or blood and adrenalin, and (3) injections of extracts of pressor renal proteins into nephrectomized dogs. It is suggested that changes in venous pressure, blood volume, hematocrit, and oxygen saturation of the blood may play a role in the pathogenesis of the arteriolar lesions observed. Arterial constriction, in addition to any direct vascular damaging action it may have, may also act indirectly on the vessel walls by initiating physiological changes in the venous circulation.

The arteriolar lesions that follow injections of large quantities of adrenalin can be prevented by pretreatment with an adrenolytic substance, Dibenamine.

Injections of adrenalin combined with massive transfusions of blood result not only in arterial damage in the heart, aorta, and gastro-intestinal tract, but also in diffuse arterial necrosis and hemorrhage in the kidneys of intact dogs.

DAVIS, J. (1950.) **Antihistamines in allergic and non-allergic dermatoses.**—*Bull. N.Y.*

Acad. Med. **26.** 686-699. [Author's conclusions copied *verbatim*.] **818**

Antihistaminic therapy does not supplant other forms of therapy or the usual routine dermatologic care of patients. This group of drugs has proven successful in a large enough percentage of cases and has demonstrated such dramatic relief of symptoms in others, that their use is warranted in many instances. Employed as an aditional drug in our therapeutic attack on allergic dermatoses, they are a welcome and much superior product in many respects to older remedies. However, the antihistamines should not be employed as a substitute for correct diagnosis nor a short cut for thorough investigation. Locally, they are contraindicated in generalized or acute dermatoses. Their prolonged use without observation is to be condemned. The antihistamines are not curative nor do they offer an easy road to the determination of a cause, although they may help to make the path an easier one for both the patient and the physician to pursue.

AEGERTER, E. & LONG, J. H. (1949.) **The collagen diseases.**—*Amer. J. med. Sci.* **218.** 324-337. [Authors' summary modified.] **819**

The authors suggested the idea that the collagen diseases affect not only the fibrous connective tissue but all the derivatives of the primitive mesenchyme: connective tissue, reticulum, cartilage, bone and muscle. They proposed that the mesenchyme is a primitive organ of defence and that there may be a similar although less frank activity in its related tissue types. It follows that all of these tissues might be injured if the defence mechanism (immune reaction) became altered. The evidence of this abnormal antigen response can be seen in the reticulum and its product, globulin. The same abnormal response in related tissue types might conceivably produce the peculiar reactions, fibrinoid degeneration and reticulum derivative proliferation that characterize the lesions in fixed tissue. The variation in clinical and pathological expression of these diseases might be accounted for on the basis of modifying factors of which constitution and the endocrine hormones appear to be of importance.

See also absts. **672** (animal mycoses); **846** (pulmonary oedema); **880** (hereditary hernia); **881** (congenital hernia in cats).

POISONS AND POISONING

VALADE & SALLE. (1948.) Aperçu sur les nouveaux toxiques de guerre. **[Review of new agents of chemical warfare.]**—*Rev. vét. milit.* **3.** 377-385. **820**

A general account of two toxic hexaphosphate compounds, one containing the cyanide group and the other fluorine. The intravenous dose (of the former used as an example for both) causing death to small animals is 40–50 μg. per kg. The essential point of attack is the nervous system and they are more toxic than HCN.—MALCOLM WOODBINE.

VÖLKER, R. & KRAUSE, D. (1950.) Über plötzliche Todesfälle bei Chloralhydratnarkosen. **[Sudden deaths occurring during chloral hydrate anaesthesia.]**—*Dtsch. tierärztl. Wschr.* **57.** 25-27. **821**

Irritation of the vagus during chloral hydrate anaesthesia may lead in rare cases to sudden death. Its effect on arterial blood pressure is not always a measure of this toxic action.—NESTA DEAN.

DAVIES, R. (1950.) **Fatal poisoning with udolac (Diaminodiphenylsulphone).**—*Lancet.* 258. 905-906. **822**

D. discussed the effects of udolac, a paste containing 33·3% 4:4′diaminodiphenyl sulphone, used for the treatment of mastitis in cows. It is more active, but considerably more toxic than sulphanilamide; in man it may cause methaemaglobinaemia and its toxic action is due partly to this and partly to a direct toxic action on the brain. A case of a child having swallowed 15 g. udolac is described and the P.M. findings are discussed.

There were no toxic symptoms in sheep given 0·1 g. per kg. but of four sheep given 0·2 g. per kg. two died and in one of the others severe toxic effects were observed. The toxic action seemed to be exerted on the central nervous system; there was a preliminary period of excitement followed by ataxia, the symptoms being most acute seven hours after the sulphone had been given, at a time when the blood-sulphone level was 4 mg. per 100 ml.—E.M.J.

ANDRODIAS, A., ENESCO, M. & TOURATIER, L. (1949.) Essais de traitement de quelques états infectieux des bovidés par le digalactoside-PP′ diamino-diphényl-sulfone. **[An attempt to treat some infectious conditions in cattle with a galactose derivative of *pp′* diaminodiphenyl sulphone.]** — *Rev. Méd. vét., Lyon et Toulouse.* **100.** 281-290. **823**

The authors discuss the use of a 40% solu-

tion of a galactose derivative of 4:4′ diaminodiphenyl sulphone in *in vitro* tests against pneumococci, streptococci and staphylococci and also in *in vivo* tests in mice, comparing its effect with sulphapyridine and sulphathiazole. It is less toxic than 4:4′ diaminodiphenyl sulphone and mention is made of favourabe effects obtained in certain infections in human beings. Observations are recorded on the treatment of 11 cows, in some cases with the combined use of a sulphonamide. The authors found that this galactose derivative of 4:4′diaminodiphenyl sulphone was effective in treatment of mastitis, complications which may arise *post-partum*, pulmonary infections or acute pleuro pneumonia, certain infections caused by anaerobes and acute infections of the sera.
—E.M.J.

RADELEFF, R. D. & BUSHLAND, R. C. (1950.) **Acute toxicity of chlorinated insecticides applied to livestock.**—*J. econ. Ent.* **43.** 358-364. [Authors' summary slightly modified.] 824

Sprays and dips of new chlorinated hydrocarbon insecticides have been tested for acute toxicity to livestock. Applied to calves at concentrations as high as 8·0% DDT, TDE [dichlorodiphenyl dichloroethane] and methoxychlor [1,1,1-trichloro–2,2-bis (*p* methoxyphenyl) ethane] caused no symptoms of insecticide poisoning. Unweaned calves were found to be particularly susceptible to benzene hexachloride, toxaphene, and chlordane. It was indicated that young calves might be poisoned when those insecticides are employed at twice the concentrations necessary for tick control. Factors that might result in accidental poisoning of livestock through field use of insecticides are cited and it is suggested that the three last named insecticides be used with extreme care, especially on unweaned calves.

WHITE, E. P., SEWELL, O. K. & BASSETT, E. G. (1950.) **Identification of p-cresol as a toxin in oestrogen concentrates from sheep urine.** [Correspondence.]—*Nature, Lond.* **166.** 269. 825

The toxicity of oestrogen concentrates of sheep urine for mice used in their assay was found to be caused by *p*-cresol in the urine. Information on the occurrence of *p*-cresol in animal urine is briefly discussed, and methods used to eliminate the substance from the oestrogen extracts are described.—NESTA DEAN

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections, see under the appropriate disease)

MARINELLI, L. D., QUIMBY, E. H. & HINE, G. J. (1948.) **Dosage determination with radioactive isotopes. II. Practical considerations in therapy and protection.**—*Amer. J. Roentgenol.* **59.** 260-280. 826

Data on the mathematical development of formulae used in calculating dosage rates and total doses of isotopes which emit beta and gamma rays, as well as safe doses and amounts in relation to body weight were collected from the literaure. Tables have also been drawn up, giving half life, radiation energy, fraction disintegrating per day, safe tracer concentration and other dosage data for 38 isotopes, thereby compiling a useful store of material from various sources.—NESTA DEAN.

ABRAHAM, E. P. (1950.) **The nature of drug-fastness.**—*Tubercle, Lond.* **31.** 146-151. 827

Resistance acquired to a particular drug is often highly specific. This specificity is not absolute. When resistance has been acquired, it is often relatively permanent. Two main theories have been advanced to explain how drug-fast strains are formed: the mutation theory that acquired resistance results from spontaneous mutations, and the adaptation theory that acquired resistance depends on interaction between the organism and the drug. Both theories can account for many of the known facts about the development of resistant strains.
—W. R. BETT.

LONG, P. H., SCHOENBACH, E. B., BLISS, E. A., CHANDLER, C. A. & BRYER, M. S. (1950.) **The experimental background and clinical use of antibiotics.**—*Lancet.* **258.** 1139-1145. [Authors' conclusion copied *verbatim*.] 828

Owing to its widespread (and often very injudicious) use, reactions to penicillin are rapidly increasing in numbers and in severity. Streptomycin and dihydrostreptomycin may produce permanent vestibular dysfunction and/or deafness; and as there are better and less toxic antibiotics for other types of infections, their use should be limited to tuberculosis. To date, aureomycin and terramycin have been relatively non-toxic, if nausea, vomiting, sore mouth, and diarrhoea are excluded from consideration. Chloramphenicol is known to cause granulocytopenia and therefore might cause agranulocytosis. It is too early to say whether

the population will become as reactive to these last three antibiotics as it has to penicillin. Only time will tell. But we should remember that, up to the present, *all antibiotics have proved poisonous to some patients*, and we should use them with care and thought.

GROS, F., MACHEBOEUF, M., RYBAK, B. & LACAILLE, P. (1949.) Action de la streptomycine sur les bactéries non proliférantes. I. Agglutination des bactéries par la streptomycine. [**Agglutination of bacteria by streptomycin.**]—*Ann. Inst. Pasteur.* 77. 246-262. **829**

Suspensions of 24 out of 41 strains of bacteria in distilled water were agglutinated by streptomycin, but only in the absence of electrolytes. 18-hour cultures were separated from the medium and 1–3 mg. per ml. mixed with 1 ml. of a solution of streptomycin (5 mg. per ml.). When maintained at 37° C., agglutination might be instantaneous—as for *Bacillus mesentericus* or *Vibrio metschnikovii*—it usually occurred in 20–30 min. but might take 24 hours.

All R forms studied were agglutinated, as were S forms with no complete antigen, but S forms with an 0 antigen resisted agglutination. Over 500 micro g. streptomycin per 5 ml. was required and the macroscopic product was easily dispersible. The organisms became non-agglutinable if heated above 60° C. and defatted bacteria were less susceptible. Resistant and susceptible forms were equally agglutinated. Dihydrostreptomycin and streptomycinic acid are as effective as streptomycin and the agglutinating power devolved, in part, on the two guanidino groups . The action was inhibited by 0·01 M cysteine and agglutination might be due to a saturation of the free SH groups of the microbial protein.—MALCOLM WOODBINE.

CINADER, B. & PILLEMER, L. (1950.) **The purification and properties of streptolysin S.**—*J. exp. Med.* 92. 219-237. [Authors' summary copied *verbatim*.] **830**

Considerable purification of streptolysin S has been achieved by fractionation of crude bacterial filtrates with methanol, under controlled conditions of pH, ionic strength, and temperature. The final material (P III) consisted of two electrophoretic components. The purified material was employed for kinetic studies, the results of which were confirmed with hemolysin isolated electrophoretically from P III. The heat of activation (temperature characteristic) of streptolysin S was found to be 17,900 calories per mole. Time dilution curves of the hemolysin were found to be sigmoid. The influence of certain ions and lipids on the course of hemolysis was investigated. The significance of the prolonged lag period and of the deviation in the behaviour of streptolysin S from Ponder's equation has been discussed.

ROBIN, V., VELU, H. & LAHURE, R. (1949.) Pénicillines retard et posologie. [**Dosage of penicillin in domestic animals.**]—*Bull. Acad. vét. Fr.* 22. 399-405. **831**

Five forms of penicillin were examined in dogs and horses: (1) Potassium or calcium penicillin in phenoxyelthanol, (2) procaine penicillin in oil, (3) procaine penicillin in oil wth aluminium stearate, (4) quinine penicillin in oil and (5) quinine penicillin in aqueous suspension. In principle the dosage should vary inversely according to the weight. For example, if 5,000 units per kg. are used in human beings, then dogs require 10,000 units per kg. and horses 2,000.—MALCOLM WOODBINE.

JACKSON, W. F. & BRYAN, C. S. (1950.) **Penicillin milk levels in cows following intramammary administration.**—*Vet. Med.* 45. 395-399. [Authors' summary coped *verbatim*.] **832**

Penicillin milk level curves obtained after the injection into the udder of a variety of penicillin medication forms into cows at the end, during the middle and near the start of the lactation period, are presented. In general, the highest levels were obtained at the end of lactation and the lowest levels at the beginning of the lactation period.

The procaine penicillin in oil with aluminium monostearate gave measurable levels for the longest period of time. When 300,000 units were administered per quarter a measurable level of penicillin was obtained for 72 hours at the beginning of the lactation and for 192 hours during the middle of the lactation period. No other product studied maintained a measurable level for a similar period of time.

When 25,000 units or more of penicillin of any medication form were administered to cows in all stages of lactation, measurable milk levels were obtained at the 24-hour sampling period in each case, and for longer periods of time during the latter part of the lactation period.

WAKSMAN, S. A., KATZ, E. & LECHEVALIER, H. (1950.) **Antimicrobial properties of neomycin.**—*J. Lab. clin. Med.* 36. 93-99. [Authors' summary copied *verbatim*.] **833**

Neomycin has a broad antibiotic spectrum and is active against a variety of gram-positive and gram-negative bacteria, acid-fast bacteria, and actinomycetes. It is not active against fungi or viruses. It is produced by two strains of *Streptomyces fradiae* which differ in their

morphology and intensity of pigmentation of aerial mycelium. Neomycin is resistant to the action of micro-organisms and to heat under pressure. Neomycin is only slightly affected by cysteine and hydroxylamine, but its potency is markedly reduced by oleic acid and by nucleic acid. Neomycin has a strong bacteriostatic and bactericidal effect upon various bacteria, including streptomycin-resistant strains. Resistance to neomycin develops more slowly than resistance to streptomycin, although no absolute resistance, similar to that against streptomycin, has been obtained. Neomycin is highly effective in experimental animals against various bacteria. It has a rather limited toxicity and a high chemotherapeutic index.

Boger, W. P., Pitts, F. W. & Gallagher, M. E. (1950.) **Benemid and caronamide: comparison of effect on para-aminosalicylic acid (PAS) plasma concentrations.**—*J. Lab. clin. Med.* **36.** 276-282. [Authors' conclusions copied *verbatim*.] 834

It has been demonstrated that a new compound, *p*-(di-n-propylsulfamyl)-benzoic acid, Benemid, when administered orally in a daily dose of 2 gm. is capable of enhancing the plasma concentrations of *p*-aminosalicylic acid (PAS) by two- to fourfold. The enhancing effect of 2 Gm. of Benemid per day has been shown to be equivalent to the effect of 24 Gm. of caronamide [4′-carboxyphenylmethanesulphonanilide] per day. The small daily dosage, the convenience of administration, and the low toxicity of Benemid appear to justify the clinical use of this drug for the enhancement of *p*-aminosalicylic acid therapy of tuberculosis.

Town, B. W., Wills, E. D. & Wormall, A. (1949.) **Action of suramin and 'antrycide' on enzymes.** [Correspondence.]—*Nature, Lond.* **164.** 233. 835

The authors found that antrycide in concentrations as high as M/500 has no inhibitory effect on urease, succinic dehydrogenase and the yeast enzymes required for the fermentation of glucose. The hydrolysis of casein by trypsin is not significantly inhibited by M/2,400 antrycide. All these enzymes or enzyme systems are strongly inhibited by suramin. These results may furnish useful data on the difference in mechanism of the trypanocidal actions of the two drugs.—E.M.J.

Krediet-Endert, S. M. & Krediet, P. (1950.) Virofral een nieuw geneesmiddel tegen virusziekten. **[Virofral, a new remedy for virus diseases.]**—*Tijdschr. Diergeneesk.* **75.** 369-375. [English, French and German summaries.] 836

An account of claims that a proprietary remedy, "virofral", of undisclosed composition has curative effects on certain virus diseases.

Guilhon, J. (1949.) Thérapeutique anthelminthique et dérivés triphénylmethaniques. **[Anthelmintic treatment with triphenylmethane derivatives.]** — *Encyclopéd. vét. période.* **6.** 37-51. 837

The chemical and biological properties of the triphenylmethane anthelmintic compounds are described. These drugs possess the disadvantages of low therapeutic index, difficulty of manipulation, unpleasant taste and irritant action, and are inferior to ethylene tetrachloride, arecoline and phenothiazine for general use.
—Nesta Dean.

Trim, A. R. (1949.) **The kinetics of the penetration of some representative anthelmintics and related compounds into *Ascaris lumbricoides* var. *suis*.**—*Parasitology.* **39.** 281-290. 838

Data are presented on the rate of penetration of (a) certain phenolic compounds, (b) *l*-nicotine and (c) chloroform into *Ascaris lumbricoides* var. *suis*. The series of 4-*n*-alkyl resorcinols (phenolic substances), by their relative rates of penetration, revealed a typical homologous series effect. The alkaloid nicotine penetrated slowly and was greatly influenced by the degree of dissociation of its methyl pyrrolidine basic group; in the presence of certain detergents the rate of penetration of *l*-nicotine was greatly accelerated. The penetration of chloroform was rapid and did not appear to be influenced by the presence of proteins, carbohydrates and fats and their products of digestion. The outermost layer of the cuticle of *Ascaris* was the main barrier to penetration and it behaved in a manner suggestive of a thin, homogeneous layer of lipoid tissue. T. assessed the significance of these results in the study of anthelmintics.—Fergus S. McCullough.

Spies, T. D., Suarez, R. M., Lopez, G. G., Milanes, F., Stone, R. E., Toca, R. L., Aramburu, T. & Kartus, S. (1949.) **Tentative appraisal of vitamin B_{12} as a therapeutic aegnt.**]—*J. Amer. med. Ass.* **139.** 521-524. [Authors' summary copied *verbatim*.] 839

Vitamin B_{12}, per unit of weight, is the most effective antianemic substance known. It has been found to produce a hematologic response in persons who have pernicious anemia, nutritional macrocytic anemia and tropical

sprue. It is the only pure chemical substance known to be effective in relieving subacute combined degeneration in persons with pernicious anemia.

When vitamin B_{12} is administered to suitable patients, under controlled conditions, reticulocytosis occurs and is followed by an increase in red blood cells, platelets and hemoglobin. A striking clinical response parallels the hemopoietic response. About the time the reticulocytes begin to rise, the patients volunteer that they feel stronger. Those whose appetites have failed have a sudden desire for food. Symptoms arising from subacute degeneration of the spinal cord in persons with pernicious anemia are benefited by the administration of vitamin B_{12}. The severe glossitis present in some cases of macrocytic anemia heals spectacularly. In patients with sprue and nutritional macrocytic anemia there is a decrease in the number of stools and a tendency for the stools to return to normal.

The dosage of vitamin B_{12} varies greatly from patient to patient. We have observed a slight effect following the injection of as little as 4 micrograms and complete failure on as much as 10 micrograms. A response has occurred in every case when several times these amounts were administered. Perhaps the average patient will respond maximally to 100 micrograms or less. Most patients seem to respond minimally to from 8 to 10 micrograms.

Vitamin B_{12} has no effect on the leucopenia of infections or the idiosyncrasies due to drugs, idiopathic purpura, secondary anemias, aplastic anemia or leucemia.

In the management of any of these syndromes of macrocytic anemia which respond to specific therapy, we follow these five principles: (1) Make a positive diagnosis early in the course of the disease. (2) Institute persistant and intensive therapy promptly. (3) Prescribe an amount of the therapeutic agent in excess of that just necessary to maintain the patient's blood at a normal level. (4) Prescribe a diet rich in animal proteins. (5) Treat promptly all coexisting disease and any complicating factors.

KENDALL, E. C. (1950.) **Cortisone—its historic development and certain chemical and biochemical aspects.**—*Merck Rep.* **59.** No. 4. pp. 4-8. **840**

K. discussed the isolation of adrenocortical hormones; of 28 crystalline compounds only four had significant physiological activity when tested in small animals. The supply of these substances derived from the adrenal glands of slaughtered cattle was insignificantly small and two of them, compound A and compound E (later known as cortisone), were synthesized.

Cortisone was tried in human cases of arthritis with beneficial results; the effects appear to be dependent on certain specific structural characteristics of its molecule.—E.M.J.

LONGLEY, E. O. (1950.) **Ethyl chloride in veterinary anaesthesia.**—*Vet. Rec.* **62.** 152-154. **841**

L. conisdered that ethyl chloride could be more widely used as an induction anaesthetic in animals. Ethyl chloride is safe and rapid in action, producing no excitement during induction, but is not recommended for maintenance anaesthesia because of its potency and failure to produce complete muscular relaxation. He quoted figures for over 200,000 cases of anaesthesia in human beings in which the mortality rate with ether was twice as great and with chloroform twelve times as great as with ethyl chloride. L. used the agent on over 50 occasions on cats, dogs, wild animals and birds.

The subject was placed in a glass container into which was poured sufficient ethyl chloride to produce a 10% vapour-air mixture. At room temperature 1 ml. of the liquid produced 340 ml. of pure vapour. Anaesthesia became deep in 1–2 min.; the subject was removed from the container and if a maintenance anaesthetic was not superimposed recovery commenced in 2–5 min.

Ethyl chloride is also useful for euthanasia and the liquid when sprayed on the skin is a local analgesic.—E. J. H. FORD.

FURMAN, D. P. & BANKOWSKI, R. A. ((1950.) **Absorption of benzene hexachloride in poultry.**—*J. econ. Ent.* **42.** 980-982. [Authors' summary copied *verbatim.*] **842**

As demonstrated by a microbioassay technique, benzene hexachloride was absorbed by poultry tissues following treatment of roosts with various formulations of the compound. The level of absorption was below the average threshold of detection by taste and odor tests. Absorption was demonstrated following the use of either high gamma preparations, or a mixture of the isomers of benzene hexachloride. Absorption was not demonstrable by bioassay following roost treatments of material containing 0·5% gamma isomer except for a very slight amount present in the skin of one bird. When formulations containing 1·2 to 2·4% gamma isomer were used, absorption was demonstrated in skin, flesh and liver.

Although chickens were continuously exposed to treated roosts, their tissues lost their

toxicity, as measured by bioassay, within 3 to 6 weeks following roost treatment, except in one instance where a residual toxicity was detected in the skin.

SYMES, C. B. (1946.) **Colonial insecticide research, Entebbe. Progress Report No. 1.** pp. 42. London: Inter-Departmental Insecticide Committees, Agricultural Research Council. **843**

The report is mainly devoted to an account of investigations into the insecticidal efficiency of B.H.C. (benzene hexachloride) and D.D.T. against tsetse flies. Two islands on Lake Victoria, with a natural tsetse fly infestation, were used for the field experiments. The vegetation on one island was sprayed to a height of six feet with a 5% D.D.T. in oil preparation, and the other island was treated in a similar manner with 5% B.H.C. (0·5% γ-isomer) in oil. These insecticides were applied in amounts approximating 100 mg. per sq. ft.

The results were assessed by the daily fly captures of two boys, together with a chemical and biological assay of the insecticide present upon the leaves of vegetation collected from the islands.

All chemical estimations of the insecticides were based upon the determination of hydrolyzable chlorine. The biological tests consisted of exposing laboratory bred tsetse flies (*Glossina palpalis* or *morsitans*) for 20 sec. to materials treated with B.H.C. or D.D.T., and recording the percentage mortality.

Results of the island sprayings indicated that a 50%–80% reduction occurred in the tsetse fly population, and a period of 4–6 weeks elapsed before the former density was reached. D.D.T. gave the higher kill and longer protection.

A second spraying with B.H.C. four weeks after the original treatment, resulted in an immediate 80% reduction in the fly population, but after an interval of seven weeks the population had reached 80% of its original number. These results of the second spraying were an improvement over those obtained with the first treatment.

The examinaion of the residual deposits of D.D.T. and B.H.C. on various types of vegetation revealed an appreciable loss of insecticide through penetration or absorption into the leaves. This loss varied with the different types of leaves, and became more rapid after 8–10 days. Tests on the absorption rate of insecticidal deposits on glass, thatch, mud and wood were made. Thatch, dried mud and unplaned wood absorbed substantial amounts of the insecticide. The absorption was less when the insecticide was sprayed as a suspension, as opposed to its use as an emulsion or in solution.

In addition, trials were conducted using insecticidal grenades which produce a smoke containing D.D.T. or B.H.C. Both types were tested, and their efficiency assessed by placing cotton gauze cages, containing 10–20 tsetse flies (*G. palpalis*) at intervals of 10–15 yards along the anticipated line of flow of the smoke. The results were assessed by the percentage mortality of flies in the cages after 12–24 hours.

When released, the smoke formed a cloud 15–40 feet in depth when 60–100 yards from the point of issue. In those cases where the smoke came into contact with the flies, kills up to 100% within two hours were observed.

Details are included of work in progress at the time the report was written, with D.D.T. and B.H.C. against *G. pallidipes*, using sprayed cattle as bait, and also against mosquitoes and termites.—D. W. JOLLY.

LIDWELL, O. M. & LOWBURY, E. J. (1950.) **The survival of bacteria in dust. I. The distribution of bacteria in floor dust. II. The effect of atmospheric humidity on the survival of bacteria in dust. III. The effect of light on the survival of bacteria in dust. IV. Atmospheric humidity and the bactericidal action of ultra-violet irradiation.**—*J. Hyg., Camb.* **48.** 6-20; 21-27; 28-37; & 38-43. [Authors' summaries copied *verbatim*.] **844**

I. The viable bacteria in 10 mg. portions of dust were estimated by shaking with 5 ml. of Ringer's solution in 1 oz. bottles containing glass beads. The extract was allowed to stand for a few minutes, and 0·1 ml. amounts were then plated out at suitable dilutions. Successive portions from the same sample of dust showed very great variation in the bacterial counts, and this variation has been examined in series of twenty such portions. The distribution of the counts for three groups of organisms appears to approximate to a log-normal form, and the graphical estimate of the log-median is taken as a suitable parameter for the study of the influence of environmental factors on the survival of dust flora.

II. Dust from scarlet-fever wards was exposed to a controlled range of atmospheric humidities by enclosure in metal boxes containing anhydrous calcium chloride and saturated solutions of potassium carbonate, sodium nitrite, potassium bromide and sodium sulphate.

The death-rate of total organisms, *Staphylococcus aureus* and *Streptococcus pyogenes* in

the dust was assessed by periodic sampling of series of twenty 10 mg. portions. A positive correlation between atmospheric humidity and death-rate was observed for the three groups of organisms counted in three specimens of dust.

III. The effects of daylight, low-intensity ultra-violet radiation, fluorescent lighting, and tungsten-filament lighting on the survival of dust flora have been studied, at room humidities of about 60% and under dry conditions. The first three radiations all cause a significantly enhanced death-rate at room humidities for all groups of organisms studied. The effect appears to be limited in extent and to be complete in about ten days. The action of the radiations is much slower under dry conditions.

IV. The bactericidal effect of ultra-violet radiation on dried films of β-haemolytic streptococci has been shown to be dependent both on the relative humidity and on the nature of the suspending medium from which the films are prepared. In particular, while the bactericidal action is most often more rapid under dry conditions, films prepared from suspensions in dust extract culture show a similar behaviour to that of naturally occurring dust flora and are most resistant to the effects of radiation under dry conditions.

FRANKLIN, W., DENTON, C. & LOWELL, F. C. (1950.) **The pulmonary retention of aerosols: a quantitative method of measurement using sodium para-amino hippurate.**—*J. clin. Invest.* **29.** 1177-1181. [Authors' summary and conclusions copied *verbatim*.] **845**

A method for the quantitative measurement of the pulmonary retention of aerosols is described using sodium para-amino hippurate. The use of this substance permits determination of the amount of aerosol retained by: (1) the difference between the amount inspired and that expired and trapped in the mouth; and (2) the amount which is absorbed and appears in the urine. The first requires a cumbersome apparatus; the second, collection of urine over a period of six to 12 hours. In either case, the method could readily be modified for study of the pulmonary retention of other substances given as aerosols by incorporating sodium para-amino hippurate in the solution to be nebulized.

See also abstr. **635** (sulphanilamide, penicillin); **641** (cortisone in mouse TB.); **655** (sodium sulphamerazine and *S. pullorum*); **668** (streptomycin and sulphonamides in brucellosis); **669** (chloramphenicol and aureomycin in brucellosis); **670** (brucellosis); **682** (trypaflavine); **683** (trypanosomiasis); **684, 686 and 691** (phenanthridine, phenanthridinium); **685** (antrycide); **692** (stibophen and phenanthridinium); **695** (aureomycin in trichomoniasis); **696** (blackhead); **699** (sulphaquinoxaline); **700** (sulphonamides in coccidiosis); **702** (antimalarial drugs); **727** (virus infections); **736** (penicillin in psittacosis); **750** (immunochemical studies); **741** (kerato conjunctivitis); **750-751** (ACTH); **755-760 and 824** (insecticides); **764** (anthelin); **766** (anthelmintic); **767** (gapeworm disease); **768** (mandaverm); **771** (hetrazan); **772** (*Wuchereria bancrofti*); **815** (penicillin in canine conjunctivitis); **821** (chloral hydrate anaesthesia); **822** (udolac); **823** (sulphone drug); **865** (phenothiazine); **898** (report, Medical Research Council); **905** (book, veterinary medicine); **907** (book, biological standardization).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

DURLACHER, S. H., BANFIELD, W. G., JR. & BERGNER, A. D. (1950.) **Post-mortem pulmonary edema.**—*Yale J. Biol. Med.* **22.** 565-572. [Authors' summary slightly modified.] **846**

Pulmonary congestion and edema develop during the first few hours of the post-mortem period in rabbits killed by a variety of methods including: poisoning by Nembutal, magnesium sulphate, the intravenous injection of air, electrocution, "rabbit punch", and the inhalation of ether. Following exsanguination post-mortem pulmonary edema does not occur. The quantity of edema present three hours after death varies with the method of killing, the route of administration of the lethal agent, the temperature, and the intratracheal pressure. Evaluation of pulmonary edema and congestion should not be made in experimental animals unless examination is made immediately after death.

LEWIS, J. H., FERGUSON, J. H. & HOWE, A. C. (1950.) **Studies on a proteolytic enzyme system of the blood. I. Inhibition of fibrinolysin.**—*J. clin. Invest.* **29.** 486-490. [Authors' summary copied *verbatim*.] **847**

Antifibrinolysins of human, dog and bovine origin did not show specificity for fibrinolysins prepared from sera of the same species. Serum antifibrinolysins differed from purified trypsin inhibitors, derived from soybean, navy bean and pancreas, in their aciton on fibrinolysin. Serum inhibitors required a period of time for their maximal action, while purified inhibitors acted immediately and in very low concentrations.

Chloroform treatment destroyed active fibrinolysin as well as antifibrinolysin, and could not be used as a method of separation of the fibrinolysin-antifibrinolysin complex.

No evidence could be obtained to suggest that the products of fibrinolysis are inhibitory to fibrinolysin.

LEVEEN, H. H., TALBOT, L. J., RESTUCCIA, M. & BARBERIO, J. R. (1950.) **Metabolism and excretion of alkaline phosphatase: relation to liver function and determination of maximal**

secretory rates of liver.—*J. Lab. clin. Med.* 36. 192-205. [Authors' summary copied *verbatim*.] 848

The intravenous injection of alkaline phosphatase extracted from calves' duodenum has made possible a study of its metabolism and excretion in dogs. The phosphatase is rapidly removed from the circulating blood by the liver which secretes the material over a longer period. Evidence is presented to show that the secretory dynamics for liver cells are similar to those seen in renal tubules. Despite wide fluctuations in biliary phosphatase concentrations, the injected material appears in the bile at a constant rate showing that a maximal secretory ceiling (Lm) is reached. Phosphatase is not catabolized or inactivated, and the injected doses can be fully recovered in the bile. A small portion of the secreted biliary phosphatase is reabsorbed in the intestines. A theory for phosphatase secretion and the regulation of serum phosphatase levels has been offered. The elevated serum phosphatase levels seen in cases of biliary fistulas are not caused by nonsecretion of phosphatase by the liver.

The possibilities of utilizing this method in studying various types of liver diseases are discussed briefly. Approaches for future investigations of this nature are indicated.

CHANG, M. C. (1950.) **Further study of the role of hyaluronidase in the fertilization of rabbit ova *in vivo*.**—*Science*. 112. 118-119. 849

It has been claimed that hyaluronidase is of value in the treatment of human oligospermia. Experiments with rabbits, however, in which highly purified hyaluronidase was either placed in the vagina before insemination or added to the spermatozoa suspension, failed to show that the enzyme had any effect on the *in vivo* fertilization of rabbit ova. Fertilized ova were still observed in cumulus cells so that the dispersal of these cells does not appear to be so important for fertilization as *in vitro* observations suggest.

—J. A. NICHOLSON.

MCMANUS, J. F. A. & CASON, J. E. (1950.) **Carbohydrate histochemistry studied by acetylation techniques. I. Periodic acid methods.**—*J. exp. Med.* 91. 651-654. [Authors' conclusions copied *verbatim*.] 850

An acetic anhydride pyridine mixture acetylates hydroxyl groups in tissue sections. The acetyl groups can be removed from tissue sections by weak alkali. Sections acetylated by acetic anhydride pyridine no longer produce aldehydes after oxidation by periodic acid. Acetylated sections subjected to weak alkali regain the ability to produce aldehydes after oxidation by periodic acid. Acetylation of tissue sections and the removal of acetyl groups by weak alkali can be used as histochemical confirmation of the carbohydrate nature of materials coloring with Schiff's reagent after periodic acid.

ROMIJN, C. (1948.) **The red blood picture of the horse.**—*Tijdschr. Diergeneesk.* 73. 333-352. [In English. Dutch summary.] 851

Blood samples were withdrawn into the dry, mixed oxalates of Heller and Paul, by jugular puncture from 82 horses: mares, geldings and stallions. The following were estimated or calculated: packed cell volume (P.C.V.), erythrocyte count, haemoglobin content, mean cell diameter, mean corpuscular haemoglobin, mean corpuscular volume, mean corpuscular haemoglobin concentration, and mean corpuscular average thickness. Also estimated were the oxygen and carbon monoxide capacities and iron content of defibrinated blood and serum. The figures obtained were statistically analyzed.

[R. attempted to arrive at definite values which will be generally acceptable on grounds of technical accuracy. One of his methods—haemoglobin estimation—is not described in sufficient detail for an opinion to be formed, also in estimating the mean cell diameter, only 100 cells were measured and the resultant curve is bifid at the peak.]—L. M. MARKSON.

TÖTTERMAN, G. (1948.) **Are the basophilic leucocytes "heparinocytes"? Part I.**—*Acta med. scand.* 130. 176-182. [In English. Author's summary slightly modified.] 852

Cases of acute myeloid leucemia with low platelet counts and severe hemorrhagic diathesis are often combined with a low number of basophils.

Cases of chronic myeloid leucemia with pronounced basophilia do not show greater tendencies towards hemorrhages than do cases without basophilia.

A clinical material will not give a reply to the question whether the basophilic leucocytes contain heparin or not; the problem may possibly be clarified by endeavouring to state, from *in vitro* tests, whether a protein-free extract of basophilic leucocytes has the effect of heparin.

CONLEY, C. L., RATNOFF, O. D., ELLICOTT, C. E. & HARTMANN, R. C. (1950.) **Studies on the initiation of blood coagulation. II. An anticoagulant inhibiting the activation of a**

plasma thromboplastic factor.—*J. clin. Invest.* **29.** 1182-1188. [Authors' summary copied *verbatim.*] **853**

Evidence is presented which substantiates the view that platelet-free plasma contains a factor which is potentially thromboplastic. An anticoagulant is described which was present in the plasma of a patient with an atypical hemorrhagic diathesis. This anticoagulant retarded the clotting of normal blood. It did not inhibit the action of thrombin, prothrombin, accelerator globulin, platelets, or thromboplastin derived from various sources. The clot-inhibiting effect seems best explained by assuming that the anticoagulant inhibits the action of the plasma thromboplastic factor.

CLARK, R. (1950.) **The paralytic action of histamine on the ruminal musculature.**—*J. S. Afr. vet. med. Ass.* **21.** 13-17. **854**

In experiments with Merino sheep with ruminal fistulae, it was found that as little as 0·25 mg. of histamine given intravenously caused cessation of ruminal contractions whilst 2 mg. caused cessation of movements for 30 min. and hypermotility of the rectum for the same length of time. The ruminal paralysis could be relieved by the administration of antihistamine drugs such as anthisan N(2-dimethylamino ethyl) N (*p*-methoxybenzyl) 2-aminopyridine maleate or phenergan N (2-dimethylamino-n-propyl) phenothiazine hydrochloride in 50 mg. doses and their previous administration prevented the paralysis. The action of histamine appeared to be on the muscle, for the rumen still responded to vagal stimulation after it had been paralyzed by histamine. It is suggested that some cases of natural ruminal stasis may be due to histamine liberation in the rumen which explains the reports that anti-histamine drugs may be of value in certain forms of bloat.—J. A. NICHOLSON.

COOPER, I. S. (1950.) **A neurologic evaluation of the cutaneous histamine reaction.**—*J. clin. Invest.* **29.** 465-469. [Author's summary and conclusions copied *verbatim.*] **855**

The spreading flare phase of the triple response is absent following complete transection of a spinal nerve.

The spreading flare is absent or markedly decreased in dermatomes below the level of complete transection of the spinal cord, and following isolation of the cord from nervous centers cephalad to the pons.

Neither preganglionic sympathetic pathways nor the final common pathways are essential to the spreading flare.

It is suggested that the axone reflex alone cannot subserve the neurogenic mechanism of the spreading flare, and this mechanism may include a suprasegmental reflex arc, the afferent arm of which reached as high as the diencephalon or higher. The afferent and efferent impulses in this reflex travel via the dorsal nerve roots.

ZACHERL, M. K. & KAPOUN, R. (1947.) Über Chromogene des Rinderharnes. **[Chromogens of cattle urine.]**—*Wien. tierärztl. Mschr.* **34.** 771-775. **856**

In cows the indican content of urine was found to be much higher in fasted, slaughtered animals than in samples from those living and normally fed. Its value as a diagnostic agent, indicating conditions of intestinal putrefaction is therefore open to question. Urorosein was found in all normal samples of urine from cows.
—R. MARSHALL.

JEZESKI, J. J., HALVORSON, H. O. & MACY, H. (1950.) **The action of microorganisms on fats. I. Oxygen uptake by bacteria in the presence of lipid substrates.**—*J. Bact.* **59.** 645-658. **857**

The ability to take up oxygen in the presence of fatty substrates was studied, using strains of *Mycobacterium phlei, Pseudomonas* and an orange-pigmented micrococcus. The results suggest that at least two enzymes are concerned in the oxidation of compounds of the fatty acid series, one being specific for short chain acids and the other for long chain acids. Details are given of the effects of buffers, the rate of lipolytic action and the influence of pH. In the case of *Pseudomonas* and *Mycobact. phlei* there is some evidence of a specific enzyme which acts on methyl linoleate.
—E. G. WHITE.

GIROUD, A. & MARTINET, M. (1949.) Influence de la sulfaguanidine sur la reproduction. **[Effect of sulphaguanidine on reproduction.]**—*C.R. Soc. Biol. Paris.* **143.** 844-845. **858**

It is known that the long continued administration of sulpha-drugs affects the alimentary flora and their production of vitamins and that an avitaminosis may have a deleterious effect on the embryo during pregnancy. In order to investigate this point, pregnant rabbits were given 0·3–1 g. of sulphaguanidine daily for the first 15 days of pregnancy and killed on the 21st day. The number and weight of the embryos were recorded. In animals receiving sulphaguanidine with or without an enhanced diet,

both the number and weight of the embryos were significantly less than in control animals. It is concluded that sulphaguanidine may lead to the poor development of the embryo or even to abortion, but whether this is caused by the drug itself or by its action on the alimentary flora has yet to be determined.

—J. A. NICHOLSON.

KAUFMAN, L. (1948.) Badania nad "starzeniem sie" jaj II. Spadek procentu wylegu, a zawartość katalazy w przechowywanych jajach. [**"Aging" of eggs II. Decrease of hatchability and catalase content in stored eggs.**]—*Ann. Univ. M. Curie-Skłod.* Sect. E. **2.** 19-27. [Abst. from English summary.] **859**

K. attributed delayed growth and increased mortality of chick embryos in eggs which had been stored previous to incubation to H_2O_2 intoxication. H_2O_2 is produced in living cells but is normally split up by catalase. The catalase content of new-laid eggs is much higher than of those kept in cold storage. Similarly the germinating power of stored grain was reduced as the catalase content fell. When glutathione, a detoxifying agent was injected into the eggs stored for up to 30 days before incuabtion, embryo mortality was reduced.

AUSTIN, C. R. (1949.) **The functions of the endocrine system in pregnancy.**—*Aust. vet. J.* **25.** 190-193. **860**

An outline is given of the functions of the sex hormones in ovum transport, blastocyst enlargement, implantation or attachment, and in subsequent stages of embryonic development. The hormonal control of parturition, the presence and relative amounts of sex hormones in the blood and urine during pregnancy, and the hormonal diagnosis of pregnancy in domestic mammals are also briefly considered.

—C. R. AUSTIN.

ANON. (1950.) **Sweat and adrenal function.** —*Brit. med. J.* Sept. 16th. 667. **861**

It has been observed in man that there is a close relationship between the concentration of salt in the sweat and the production of cortical hormones by the adrenal glands. Thus in acclimitization to heat, which is known to be under adrenal influence, the sweat is rich in NaCl. This is compensated for by a conservation of salt by the kidney, but if the heat conditions persist, the renal retention of salt is not sustained and it is now found that the salt lost in the sweat is greatly reduced. Again, in Addison's disease, the salt content of the sweat is increased, whereas in Cushing's syndrome it is reduced. It has been suggested, therefore, that determinations of the salt content of sweat might provide a means of determining adrenal activity provided that a standard test could be devised.—J. A. NICHOLSON.

SANDBERG, E. (1949.) **The bovine cervical thymus and its involution.**—*Uppsala Läk-Fören. Förh.* **54.** 269-319. [In English.] **862**

The thymus glands from 1,730 slaughtered cattle ranging between the ages of six months to 17 years and from 32 foetuses were examined in an investigation of normal structure and involution. Weight curves suggest that the maximum weight is reached at puberty, averaging 210 g. in cows. From the age of two years involution proceeds at first rapidly then more gradually, but at the age of 15 years a figure of 70 g. is still obtained as the average weight. No appreciable difference was found between cow and bull, although with the latter the numbers examined and age range surveyed were smaller; but bullocks were observed to have considerably larger glands.

A decrease in size was noted in pregnant and undernourished animals, but TB. (the condition of the gland in tuberculous animals being the primary intention of S.'s investigation) had no appreciable effect until the more advanced stages of the disease were in evidence.

—C. W. OTTAWAY.

CHAILLEUX, D. (1948.) Les mouvements du corps clignotant physiologie — pathologie. [**Physiology and pathology of the nictitating membrane.**]—*Thesis, Alfort.* pp. 81. **863**

A detailed account of the anatomy and physiology of the nictitating membrane of the dog and cat is given. Its function is to protect the eye by both active and passive movements as in birds. The structure contains smooth muscle fibres under sympathetic control and it can be activated reflexly, the sensory surface being the cornea and the motor nerve, the oculo-motor. A number of cases of protrusion of the membrane in the cat are recorded. These responded to ephedrine administration.

—J. A. NICHOLSON.

CATER, D. B. & LAWRIE, N. R. (1950.) **Some histochemical and biochemical observations on the preen gland.**—*J. Physiol.* **111.** 231-243. [Authors' summary copied *verbatim*.] **864**

The histology of the preen gland of the fowl and duck has been investigated by histochemical methods. Evidence is presented for the existence of two zones in the gland, dis-

tinguished by histochemical staining reactions for acid phosphatase, glycogen and lipid. The acid phosphatase of preen gland tissue has been shown to have a pH optimum of 4·8, to be insensitive to Mg ions and to KCN, but to be inhibited by KF. An esterase present in preen gland tissue, which hydrolyses short-chain fatty acid esters, has been described. The presence in preen gland homogenate of lipase and of choline esterase has been excluded.

See also absts. **791** (diet and dental development in sheep); **797** (size of thyroid in chicks); **798** (abnormal feathering and diet); **799** (growth and bone formation); **805** (embryonic development in fowls); **806** (riboflavin in sow's milk); **807** (vitamin C and bone and muscle in g. pigs); **812** (bovine teat); **908** (book, heat regulation).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

ENZIE, F. D. & KURTPINAR, H. (1950.) **The effect of therapeutic and small daily doses of phenothiazine on the color of goat milk.** —*Vet. Med.* **45.** 361-364 & 372. [Authors' summary copied *verbatim*.] **865**

In limited trials with nursing goats, milk from animals receiving 2 or 3 gm. of phenothiazine daily almost invariably developed a pinkish discoloration when exposed to the air for several hours. With daily doses of 0·5 and 1 gm., however, discoloration occurred less frequently, and it was generally detectable only when the milk was compared with a control sample. Insofar as discoloration of milk is concerned, therefore, a regimen of free-choice phenothiazine therapy which limits the ingestion of the drug to a maximum of 1·0 gm. daily should be saisfactory for dairy goats. Following therapeutic doses of the drug, the milk of nine of ten goats resumed an essentially normal appearance after two days, and the milk from the other animal was apparently normal one day later. The milk, therefore, is usable again for human consumption 72 hours after the administration of therapeutic doses of the drug. Variations in the intensity of discoloration among individual animals receiving similar doses of the drug apparently were due to differences in milk production.

LOMBARD, C. (1949.) Les viandes oedémateuses. [**Dropsical meat.**]—*Rev. Méd. vét., Lyon et Toulouse.* **100.** 505-524. **866**

In generalized oedema, the tissues are impregnated with a fluid consisting of 98% water, 0·7% sodium chloride, 0·1–0·8% sodium carbonate, calcium and sodium phosphates, traces of lactates, urates and a little urea. It is poor in proteins and is incoagulable or only feebly so. The flesh of the carcass is damp and cold, and is not dried by exposure to strong currents of air or by wiping with a cloth; after suspension for long periods the fluid accumulates in the lower regions so improving the upper ones. There is a period of "pre-oedema" which cannot be detected in the living animal; its influence on carcass meat is negligible.

The fatty tissues are generally most affected, especially the marrow fat of long bones. When there is doubt about a carcass the marrow fat should be tested with alcohol. If it will float in 52% alcohol (density 0·932) it contains less than 40% water and the carcass can be passed. If it floats in 47% alcohol (density 0·940) the water content is 40–50% and the case is doubtful. If it sinks in 32% alcohol (density 0·963) the water content is over 50% and the carcass should be condemned. Distinction must be made from severe anaemia, which causes pale but not necessarily oedematous muscles, and from recent malnutrition in a previously fat animal, when some of the fat deposits become filled with a pale gelatinous mass. True oedema may be caused by high blood pressure, or by osmotic pressure of proteins or crystalloids especially sodium chloride, in the lymph spaces. It is always due to disease and so should always warrant condemnation.—R. MACGREGOR.

PANKOV, I. P. (1949.) [**Immediate aims of veterinary colleges.**]—*Veterinariya, Moscow.* **26.** No. 8. pp. 15-19. **867**

Large numbers of highly qualified veterinarians are required to raise the level of research work, to integrate theory with practice, to train livestock farm personnel in the rudiments of animal husbandry and to run efficient experimental farms. The new Michurin theory of biology is to be the basis of teaching. However, the desirability that everyone should think and work individually is emphasized.

The Timiryazev Agricultural Academy in Moscow has charge of seven farms for research and instruction of students. They aim to produce, in 1951, 5,000–6,000 kg. milk from each cow; 22 piglets from each sow with a minimum 16 kg. live weight each at weaning; 6 kg. wool per ram and 4·3 kg. per ewe; to prepare 9–10 tons silage and 2·5 tons hay per cow; and to grow two-and-a-half metric tons of hay per hectare, with root and other crops in addition.

—F.A.A.

ANON. (1949.) **[Training junior veterinary staff.]**—*Veterinariya, Moscow.* **26.** No. 8. pp. 1-3. **868**

Among other items, the Three-year Veterinary Plan of the U.S.S.R. has laid down that in order to implement the desired increase in numbers and productivity of domestic animals, the present shortcomings and inefficiency in management of stock at all levels must be eliminated. For this purpose "feldshers" [veterinary workers with elementary training, used to work under the properly trained veterinarians], bailiffs and all those responsible for the care and management of animals should undergo a year's tuition in veterinary schools. In addition, stockmen, grooms and, generally, every worker intimately connected with animals should be taught animal management, proper care of them and also the elements of the prevention of disease and the care of sick animals. Short lectures, demonstrations and practical training should be given. Michurin's theory is to be the basis of the new instruction.—F.A.A.

See also absts. **637** (TB. in slaughter cattle); **638** (tubercle bacilli in milk); **653-654** (food poisoning); **897** (report, Gt. Britain).

LIVESTOCK HYGIENE

BÉCHADE, A. & BOUTON, P. (1950.) Quelques aspects techniques de la desinfection des étables. **[Disinfection of stables.]**—*Encyclopéd. vét. période.* No. 5-6. pp. 150-160. **869**

The Department of Loiret now has a disinfection service for use in stables, byres, etc. including also disinfestation against arthropod pests. The buildings are first cleaned with water only, or water and a soapless detergent, and then sprayed with a disinfectant mixed with whitewash or a whitening material; the latter not being really necessary but demanded by popular opinion. D.D.T. was tried as an insecticide but later abandoned as inferior to benzene hexachloride at present used. The soil is sprayed with an antiseptic as a final precaution. The washing and spraying are done by a 4-cylinder engine of 3·75 horse power driving a 2-piston pump, with hoses and sprays attached, supplied by a 400 l. tank; the whole apparatus being drawn by a Renault van containing camping kit for the operator. It takes 3 hours 45 min. to disinfect a building 9·5 m. × 6·5 m. × 2·9 m. and the material costs 783 F. A charge of 2,610 F. per 35 square metres of floor is made which is considerably less than that charged by private firms, but the service pays its way.—R. MACGREGOR.

CENA, M. & COURVOISIER, P. (1949.) Untersuchungen über die physikalischen Faktoren des Stallklimas unter besonderer Berücksichtigung der Abkühlungsgrösse. **[The physical factors of stall climate.]**—*Schweiz. Arch. Tierheilk.* **91.** 303-336. **870**

Using 12 cows an experiment was made to determine the physical factors of the stall climate at an altitude of 5,252 ft. above sea level (Davos).

The cows each weighed approximately 550 kg. Details of the cow shed are given.

For the first 11 days, the animals were grazing and occupied the shed at night only, but during the following 12 days they went out only twice daily for drinking.

In the first 13 days there was cool, autumn weather, with sunshine, becoming colder in the following days, with some snow. Details are given of the instruments used in making the records.

A maximum temperature of 18° C was recorded in the cow shed during the night, and a minimum of 13° C in the afternoon, before the return of the cows. The mean value obtained was 16·6° C in the shed and 6·0° C in the open air. Stall temperature depended firstly on the heat-production of the animals, and secondly on the influence of the outdoor temperature. During the grazing-period therefore, the temperatures in the shed varied inversely with those outside. The maximum humidity was obtained at the time of the highest temperature.

The vapour pressure in the day-time was 7·9 mm. Hg and in the night 11·0 mm. Hg, compared with 5·5–6 in the open.

The mean values of cooling measured in mg. cal. per sq. cm. per sec. in the open were 11·7 in the day-time and 9·2 at night and in the shed 5·4 and 4·4 respectively.

In the second period the day's mean temperature was 5° C in the open, 16·6 C in the shed. The wall-temperature rose from 17°–20·5° C during the test period. The mean value of cooling in the open was 10·4, in the shed 2·9 mg. cal. per sq. cm. per sec.—R. HADEK.

REPRODUCTION AND REPRODUCTIVE DISORDERS

SOBEK, V. (1950.) Poznámky k aktuální situaci v inseminaci. **[Artificial insemination.]**—*Čas. československ. Vet.* **5.** 51-52. 871

S. reviewed the artificial insemination work carried out by the veterinary service of the state-owned farms and breeding establishments in Czechoslovakia. These activities included elimination of infected and sterile bulls, periodical biological tests of sires, consolidation of existing insemination centres, and opening of new ones, introduction of up-to-date Danish and Russian methods, compulsory registration of breeding stock, training of technicians and veterinary specialists, courses, publication of pamphlets and purchase of equipment and literature.—E.G.

EMMENS, C. W. & BLACKSHAW, A. W. (1950.) **The low temperature storage of ram, bull and rabbit spermatozoa.**—*Aust. vet. J.* **26.** 226-228. [Authors' summary copied *verbatim.*] 872

A percentage of human spermatozoa withstand freezing to −79°C. in their own seminal plasma and in that of the ram, bull and rabbit. The spermatozoa of the other species do not survive such treatment whichever seminal plasma is used. Ram and bull spermatozoa may be revived from −79°C. with restitution of swirling motion if frozen slowly in mixtures of glycerol and a pentose. The best results were obtained with 7·5 to 10% of glycerol and 1·25% of arabinose, rhamnose or xylose in the semen-diluent mixture. Rabbit spermatozoa show up to 25–30 % revival, but with good motility, if frozen slowly in mixtures of 7·5% of ethylene glycol with 1·25% per cent or more of various sugars.

WILLETT, E. L. (1950.) **Fertility and livability of bull semen diluted at various levels to 1 : 300.**—*J. Dairy Sci.* **33.** 43-49. 873

In a series of four experiments 69 ejaculates from 29 Guernsey and Holstein bulls were diluted with egg-yolk citrate buffer with or without 6 g. sulphanilamide per l. of buffer. The final semen concentrations used were 1 : 100, 1 : 125, 1 : 150, 1 : 200 and 1 : 300. The diluted semen was used the day after collection and non-returns at 60–90 days were noted. In each experiment there was a slight fall in percentage non-returns with increasing dilution, but these falls were not statistically significent.

Samples of the diluted semen were stored at 4°C. for 12 days and motility determined at 2-day intervals. Viability after storage decreased with increased dilution.

—E. J. H. FORD.

KOLLER, R. & JAHNEL, J. (1950.) Chemo-Therapeutica, Antibiotica, Farbstoffe und andere Zusätze zum Samen des Stieres. **[Chemo-therapeutics, antibiotics, dyes and other admixtures to bull semen.]**—*Wien. tierärztl. Mschr.* **37.** 65-70. 874

The authors discussed the literature and considered that the most satisfactory medium for the dilution of semen used for artificial insemination is egg-yolk, buffered with citrate to pH 6·7, with added sulphanilamide. Semen so treated remains potent for six days. No new experimental work is reported.—NESTA DEAN.

MIXNER, J. P. (1949.) **Penicillin and sulfanilamide in semen dilutors and their effect on fertility of semen from relatively fertile bulls.**—*J. Dairy Sci.* **32.** 722. [Only abst. given. Abst. from abst.] 875

A statistically planned trial was carried out on 27 semen samples from nine bulls to compare the effects on fertility of three semen diluents containing respectively 1,000 units penicillin per ml. 3 mg. sulphanilamide per ml. and 1,000 units penicillin + 3 mg. sulphanilamide per ml. of egg-yolk citrate. Analysis of results based on 90-day non-returns of 520 inseminations revealed no significant difference between the diluents.—E. J. H. FORD.

FEDRIGO, G. (1950.) La displasia ghiandolare cistica dell'endometrio ovino. **[Cystic glandular dysplasia in the ovine endometrium.]**—*Nuova Vet.* **26.** 232-237. 876

From an examination of 300 ovine uteri obtained immediately after slaughter, it was concluded that the ewe is more subject to cystic degeneration of the endometrium than any other species, an incidence of 28% being found. In such cases, the endometrium appeared normal in colour with no signs of pus formation or other inflammatory changes. In most cases the cysts did not exceed the size of a pea and contained a whitish - yellow fluid. They were very numerous and were evenly distributed in the intercotyledonary spaces. Histological examinations revealed an abnormal development of the uterine glands, the intense epithelial proliferation having the character of a dysplasia which appeared to be of hormonal origin.

—J. A. NICHOLSON.

SAWYER, C. H., EVERETT, J. W. & MARKEE, J. E. (1950.) **"Spontaneous" ovulation in**

the rabbit following combined estrogen-progesterone treatment.—*Proc. Soc. exp. Biol., N.Y.* **74.** 185-186. [Authors' summary slightly modified.] **877**

Following treatment with estrogen and progesterone, 4 out of 10 rabbits ovulated spontaneously, *i.e.*, without the coital stimulus normally required to induce LH release from the hypophysis in this species.

DVOSKIN, S. (1949.) **The effect of pregnenolone on reinitiation and maintenance of spermatogenesis in hypophysectomized rats.**—*Endocrinology*. **45.** 370-374. **878**

Pregnenolone, in doses of 3 or 20 mg. per day, or 4 mg. pregnenolone acetate per day did not reinstate spermatogenesis or retard the progressive loss in weight of the testes during a 20 to 40 day period after hypophysectomy in the rat. If, however, treatment was commenced immediately after hypophysectomy, 1 mg. pregnenolone or 2 mg. pregnenolone acetate subcutaneously per day maintained spermatogenesis and partially maintained the weight of the testes. No maintenance effect was noted so far as the seminal vesicles, prostate or adrenal glands were concerned.—A. T. COWIE.

GILMORE, L. O. (1950.) **Inherited non-lethal anatomical characters in cattle: a review.**—*J. Dairy Sci.* **33.** 147-165. **879**

The subjects discussed include: (1) Skeleton—shape of skull; prognathia; brachygnathia and other types of subnormal development of the head; horns; feet and legs, including "toeing out" (excessive divergence of the cleft between the toes from a line parallel to the body), shortleggedness (without dwarfing of other parts of the body), proportionate dwarfism, flexed pasterns, bowed pasterns (incurving, as though one or more of the external phalanges were longer than the corresponding medial phalanx), sickle hocks, polydactylism, misshapen feet (involving a spread of the phalanges); angle of last rib with horizontal, depth of body; loin and rump characteristics; wrytail, screwtail, vestigial tail. (2) Integument and sense organs: notched ears, double ears, drooping ears, sweat glands of the ear; muzzle pattern; semi-hairlessness; escutcheon characteristics; curly hair, macrotrichosis; smooth tongue (epitheliogenesis imperfecta); congenital cataract, strabismus, night blindness. (3) Reproductive organs: udder development, udder slope, teat sinus topography, supernumerary teats; testicular characteristics. (4) Muscles: umbilical and inguinal hernia; bulging thigh, double size of gluteal muscles; overdevelopment of deltoid muscle; hump. There are 114 references.—E. COTCHIN.

KOBOZIEFF, N. & POMRIASKINSKY-KOBOZIEFF, N.-A. (1950.) Hernies héréditaires chez les animaux domestiques. **[Hereditary hernia in domestic animals.]**—*Rec. Méd. vét.* **126.** 257-263. **880**

The authors discuss briefly the role of heredity in the development of cerebral (pig, fowl), umbilical (horse, ox, pig), scrotal (pig) and inguinal (horse, pig) hernia in the species named. They mention a goat which developed an umbilical hernia during the last of a series of multiple pregnancies (twins five times, triplets once, then quadruplets, all normal), and which then gave birth to a single kid which was affected congenitally with a similar hernia. —E. COTCHIN.

KEEP, J. M. (1950.) **Congenital diaphragmatic hernia in a cat.**—*Aust. vet. J.* **26.** 193-196. [Author's summary copied *verbatim*.] **881**

A case of diaphragmatic hernia in a cat is reported. The possible etiology and the clinical signs, in the light of autopsy findings, are discussed. It was concluded that there was strong evidence of congenital origin.

WOLFF, E. (1948.) La science des monstres. **[Teratology.]**—pp. 265. Paris: Librarie Gallimard. Fr. 580. **882**

This book is a detailed and comprehensive review of the subject and it is far from simple to select any one particular section of it for special praise or comment. The chapters on embryological anatomy and experimental teratology are, perhaps, those that will make the widest appeal to biologists at large. In these days we are much concerned with the effects of irradiation and here we read of it in connexion with its effects on the early blastomeres of the amphibian egg. Hermaphroditism and hereditary malformations have philosophical bearings and one tends to flounder among the ruins of past concepts that have now crashed about one's ears. This is an excellent book and all who can should read it.—C. HORTON SMITH.

FREIRE, M. J. (1949.) Um caso de intersexualidade num bovino holandês. **[Hermaphroditism in cattle.]**—*Rev. Med. vet., Lisboa.* **43.** 105-110. **883**

F. described a case of hermaphroditism in a three-year-old Friesian heifer. The external genital organs were normal. In the presence of other females the animal adopted male attitudes, the vulva opened and the clitoris had

an abnormal erection; a milky mucous spermatozoa-free liquid dropped from the vulva. The animal was slaughtered and two testes were found. Histological examination revealed numerous Leydig cells but no spermatozoa.
—F. A. Esteves.

See also absts. **794** (maternal nutrition and hydrocephalus in new-born rats); **805** (folic acid and embryonic development in fowls); **849** (fertilization of rabbit ova *in vivo*); **858** (sulphaguanidine and reproduction); **859** ("aging" of eggs); **860** (endocrine system in pregnancy).

ZOOTECHNY

Tervoert, F. W., Stuart, K. C. & Stroes, J. (1949.) Bijdrage tot electrisch bedwelmen van slachtdieren dieren en toepassing "electro-schock" apparaat "Elther" voor slachtdieren. **[Electrical stunning of slaughter animals and application of the "Elther" electric shock apparatus.]**—*Tijdschr. Diergeneesk.* **74.** 161-179. [English, French and German summaries.] **884**

The "electro-shock" apparatus for stunning prior to slaughter was evolved in 1946-47, in response to an appeal from the Jews for some method that would stun the animals in compliance with the law of 1940, without offending their ritual. This apparatus uses 420 watt-sec. for cattle and horses and 280 watt-sec. for smaller animals and there is no intracerebral bleeding or intramuscular haemorrhage (blood splash) in the carcass. The Jews permitted the use of electrical stunning from 1940-46, after which no further animals were offered for Jewish slaughter. In Jan. 1949 some slaughter-houses permitted ritual slaughter without stunning.—R. Macgregor.

Hill, R., Widdowson, R. W. & Maggs, B. E. (1950.) **Milking before calving.**—*Agriculture. Lond.* **57.** pp. 351-358. [Authors' summary slightly modified.] **885**

The practice of premilking was investigated on several farms. Numerous facts and opinions concerning the effect on cow and calf were obtained, together with milk samples from four farms.

Premilking was carried out primarily to relieve congestion in the udder, which had resulted from the preparation of an animal for the ensuing lactation by "steaming up" [giving increased concentrate fodder]. Cows and heifers did not appear to have suffered in any way as a result of premilking.

Calves from premilked animals received liquids varying from colostrum to those like normal milk. Except when calves were suckled, water was added to their diet. The importance of hygiene was observed and with this management no difficulty was experienced in rearing calves. It is concluded that premilking may be carried out without detriment to the calf or its dam.

Meshew, M. H. (1949.) **The use of oxygen in the hatching of chicken and turkey eggs at high altitudes.**—*Poult. Sci.* **28.** 87-97. **886**

The percentage of fertile hens' eggs hatched in incubators receiving additional oxygen was 78·86 compared wih 54·45 in those not receiving any, the difference being due to the decrease in mortality among the 18–21 day embryos.

The haemoglobin content of the blood of embryos receiving and not receiving extra oxygen was 9·36 g. per 100 ml., and 10·12 g. per 100 ml. respectively.

In the case of turkey eggs with and without the addition of oxygen the percentage hatchability was 47·06 and 37·25 respectively. There was little difference in the haemoglobin levels.

The high hatchability with the addition of oxygen appears to be dependent on an increase in the level of carbon dioxide to about 0·8 to 1%. The added oxygen did not have any harmful effect on the rate of weight gains or on mortality in the chicks and poults hatched, the hatching weights of the chicks and poults receiving additional oxygen being slightly higher than those of the control lots.—D. Luke.

TECHNIQUE AND APPARATUS

Barratt, R. W. & Tatum, E. L. (1950.) **A simplified method of lyophilizing microorganisms.**—*Science.* **112.** 122-123. **887**

Into 8-mm. tubing, sealed on one end, 0·1 ml of the suspension to be lyophilized is introduced. Dry P_2O_5 is put into the tubing by means of an apparatus the main part of which is a brass plunger working in a brass funnel. The P_2O_5 is held between two cotton wool plugs. The tubes are frozen rapidly and, while in dry ice, every tube is evacuated individually and sealed above the P_2O_5. The tubes are put into a freezing mixture until completely dry and then sealed about two inches

above the lyophilized suspension, and below the P_2O_5.—A. MAYR-HARTING.

SHEATHER, A. L. (1949.) **The examination of bovine faeces for the presence of acid-fast bacilli.** [Correspondence.]—*Vet. Rec.* **61.** 139. **888**

S. describes a simple method of improving the efficiency of the microscopic examination of faeces for the presence of acid-fast bacilli. The sample is considerably diluted with water and allowed to stand, preferably overnight, so that vegetable matter can sediment. About 5 ml. of supernatant fluid are centrifuged and a smear examined in the usual way from the deposit.—K. G. TOWERS.

SILVER, H. K. & KEMPE, C. H. (1946.) **Clinical applications of chick embryo cultures. III. Adaptation for use by the general practitioner in bacteriologic studies of clinical problems.**—*J. Amer. med. Ass.* **132.** 377. [Authors' summary copied *verbatim*.] **889**

A simple modification of the Goodpasture chick embryo culture method has been described, which lends itself to use by the rural practitioner to whom artificial mediums are not readily available. With the chick embryo as a culture medium, it becomes relatively simple to identify the causative organisms of various diseases, such as purulent infections of the skin, otitis media and empyema. It can also be used for the culture of spinal fluid in suspected cases of meningitis and for the culture of material taken from any operative site.

THIERY, G. (1949.) L'emploi d'artifices photographiques en technique microphotographique: le "bas-relief", la "solarisation". **[The technique and apparatus employed in photomicrography.]**—*Bull. Hist. Appl.* **26.** 22-25. [Abst. in *Stain Tech.* **25.** 52. (1950), copied *verbatim*. Signed: H. J. CONN.] **890**

The writer mentions the failure of conventional photomicrography to bring out certain important details, and calls attention to two artifices which can be used to emphasize some features not brought out in ordinary photography. The first is the "bas-relief" method, in which a print is obtained by exposure to a superimposed negative and positive (the latter slightly less intense than the former), one slightly off-center with respect to the other; the bas-relief effect is of course entirely artificial, but it does serve to bring out details of the specimen not ordinarily shown. The second method is that of "solarization", in which a developed but unfixed negative is briefly exposed to light before fixation; the exposure is of 1–4 sec. to a 100 W light 1 m. away from the negative, using white light in the case of orthochromatic emulsion, red light in the case of panchromatic emulsion. A print made from such a negative has modified tone values: whites remain white, light grays remain gray, but dark grays become black and blacks become white. The result of this latter method is to furnish a picture which somewhat resembles an outline drawing. The article is accompanied by three illustrations to show how prints by each of these two suggested procedures compare with a conventional photomicrograph of the same section.

STRUMIA, M. M. (1949.) **Freezing of whole blood.**—*Science.* **110.** 398-400. **891**

Blood collected into acid-citrate-glucose mixture, frozen quickly and stored at −3°C., scarcely becomes haemolyzed on thawing in a water bath at 37°C. The technique of freezing and a study of the effect of the subsequent storage temperature were discussed.

—L. M. MARKSON.

WAUGH, T. R. & WAUGH, T. R., JR. (1950.) **A simply constructed halometer.**—*J. Lab. clin. Med.* **36.** 329-334. [Authors' conclusions copied *verbatim*.] **892**

The construction and method of use of a comparatively simple type of halometer without lenses are described. This apparatus, which employs the well-known diffraction principle, produces a large halo, measurement of which allows for the ready estimation of the mode [that value in a series of observations which occurs most frequently] of the erythrocyte diameters in a smear of blood.

WOLFF, H. S. (1950.) **An apparatus for counting small particles in random distribution, with special reference to red blood corpuscles.** [Correspondence.] — *Nature, Lond.* **165.** 967. **893**

Red cell counts by the usual methods have a coefficient of variation of about 9% which is unsatisfactory. W. describes an automatic counting apparatus which is based on that originally proposed by Lagercrantz but which overcomes the defects of his instrument by incorporating a scanning system, the width of which is greater than the diameter of the largest particle to be viewed. To get over the error caused by overlapping, a second scanning is necessary with an element of greater width. A photomultiplier is used to do the actual counting. The instrument has a coefficient of variation of 2·1%.—J. A. NICHOLSON.

LIEOU, Y. C. & KOUO, C. C. (1950.) Inoculation intracérébrale à travers l'orbite ou la fosse nasale chez la souris blanche. **[Intracerebral injection in mice *via* the orbit or the nasal cavity.]**—*Ann. Inst. Pasteur.* **79.** 109-111. **894**

The body of the mouse is enclosed in and restrained by a cylinder shaped to the body, the cylinder opening and closing along its sagittal plane. For transorbital injections a very fine needle, 1 cm. long, is pushed through the cranium at the medial canthus. For transnasal injections a needle 2 cm. long is used, penetration being effected through the roof of the nasal cavity.—L. M. MARKSON.

See also absts. **664** (differentiation of *Brucella suis*); **713** (electron microscopy of fowl pox virus); **714** (Feulgen reaction and smallpox); **884** (stunning).

MISCELLANEOUS

DE KLERK, J. C. (1950.) **Hair as a textile fibre.**—*Fmg S. Afr.* **25.** 43-46. **895**

A good wool fibre has a rough surface, formed by the edges of the surface cells, and no inner or "medullary tube". Most hairs have smooth outer surfaces and a distinct medullary tube and are therefore useless for weaving. "Kemp" is the hair that is shed annually by the sheep. It has large medullary tubes and is brittle and comparatively useless. Apart from the sheep, fibres suitable for spinning are produced by Angora goats (Mohair), Kashmir goats (Cashmere wool), Llama and Alpaca (Alpaca wool), Bactrian or Mongolian two-humped camel (Camel hair), the Vicuna, a wild relative of the llama (Vienna wool) and the Angora rabbit. Horse hair from the manes and tails of horses is used only to stiffen cloth, as in the lapels of coats. Ordinary rabbit hair is used for felt making.—R. MACGREGOR.

ANON. (1949.) **[Session of the U.S.S.R. Academy of Agricultural Science.]**—*Veterinariya, Moscow.* **26.** No. 8. pp. 4-9. **896**

The object of this session, held in May 1949, was to expound the Three-year Animal Husbandry Plan, the chief speaker being T. D. Lysenko. His main points were that the Russian scientists' approach to the understanding of the metaphysical nature of animals was wrong, which reflected itself in the low level of scientific work and the slow adaptation of results into practice; that the basis of good agriculture lies in the rational interdependence of arable and pastoral sides of it; that animal husbandry, having been much neglected, is now to have equal if not greater value than arable farming; that attention must be paid not only to the improvement of livestock but to attempts to produce new improved breeds from the existing local ones, each adapted to their environment.

The line of biological theory in animal husbandry to be followed in future must be the dialectic materialistic one of Michurin, *viz* that man-made conditions of feeding, care, maintenance and employment cause mutations in domestic animals; the effects of these acquired characteristics are then gradually inherited.

—F.A.A.

REPORTS

GREAT BRITAIN. (1948.) **The Animal Health Trust. [Formerly The Veterinary Educational Trust.] Second Report for the period 1st Sept. 1947–30th June 1948.** pp. 46. London: Messent & Bond Ltd. **897**

The completion of the acquisition of the land and buildings for the Canine Research Station at Newmarket and Farm Livestock Research Station near St. Ives, Huntingdonshire, took place during 1948. These stations are within easy reach of Cambridge. Collaboration has already been established between the Trust's scientific staff and their opposite numbers in several departments of the University. Although the Equine, Canine and Livestock stations were not yet fully equipped and staffed, the work is being coordinated by a Scientific Directorate which holds monthly meetings for that purpose under the Chairmanship of the Scientific Director. In developing the research laboratories many difficulties have arisen in the siting of the laboratories, in obtaining suitable buildings and also in obtaining expert staff.

The Trust has granted a total of 38 undergraduate scholarships and studentships of from £30 to £200 per annum and 12 Evans Final Year Studentships of £50 each. Research train-

ing scholarships also for newly-qualified veterinary surgeons are now being awarded, as well as Postgraduate Research Fellowships and Grants. The Trust has also financed the production of films of general interest to farmers and veterinary surgeons on some of the more common diseases of farm livestock and in many other ways is fostering veterinary education.

The work of the various Research Stations is also reviewed.—J. A. GRIFFITHS.

GREAT BRITAIN. (1949.) **Report of the Medical Research Council for the years 1945-1948.** pp. 283. London: H.M. Stat. Off. 5s. 898

The last Report of the Council which carried the special title of "Medical Research in War" covered the six years from October 1939–September 1945. The three-year period covered by this report has been one of reorientation and reconstruction along with a great expansion of the Council's research programme.

Penicillin and streptomycin therapy are discussed in relation to resistance of bacteria, with no new information.

The main function of the Medical Research Council is to promote scientific investigations for the acquisition of knowledge likely to be of value for the prevention, diagnosis and treatment of disease and for the maintenance of normal health and full human efficiency. In addition, the Council undertakes particular health investigations required by Government Departments for administrative purposes, and advises Departments on questions involving use of the latest knowledge of medical science.

Experiments by White on the immunizing properties of an ANTHRAX vaccine prepared from aerobic blood cultures of a non-sporing strain of *B. anthracis* were confirmed and extended. Success had so far been obtained only with cultures grown in homologous blood; thus such a culture in g. pig's blood after inactivation with toluene, will render g. pigs largely or entirely resistant to a dose of virulent anthrax bacillus or spores which kills all untreated animals in two days.

Studies on the care and management of laboratory animals were designed to eliminate waste of food material and to save labour.

—D. S. RABAGLIATI.

MARTINAGLIA, (1947.) **Union of South Africa, Johannesburg. Report of the Acting Director, Abattoir and Live Stock Market Department for the period 1st July 1946 to 30th June 1947.** pp. 21. Johannesburg: Radford, Adlington Ltd. 899

Some 285,000 cattle and 42,000 calves were slaughtered, an increase on the previous year's figures. Sheep, 450,000 and pigs 95,000 were considerably less. The revenue collected allowed nearly £5,000 surplus to be paid in aid of rates. A new sheep slaughtering hall, with chain conveyors, allows carcasses to be dressed without the skins coming into conact with blood, an immense improvement for the skin dealers, and it also provides better bleeding.

TB. caused the condemnation of only 122 beef and 440 pork carcasses, but of some 3,000 lb. of meat. 1,236 dairy herds comprising 79,677 cows were inspected and a growing incidence of MASTITIS was revealed. Of 59 milk samples examined in the laboratory, tubercle bacilli were found in two; in both cases the cows were detected and slaughtered. 882 blood smears were examined and revealed seven cases of ANTHRAX.

Cysticercus of hitherto unidentified species has been found frequently in carcasses of impala or rooibok and these have been condemned pending investigation as to its pathogenicity. CYSTICERCUS BOVIS AFFECTION caused condemnation of 1,348 beef and 3,346 pork carcasses and the offal of 6,096 beef and 4,249 pork carcasses.—R. MACGREGOR.

CHAMBERS, P. C. CYPRUS. (1950.) **Annual Report of the Department of Agriculture for the year 1949.** pp. 16. Nicosia: Cyprus Govt. Printing Office. [fcp.] 2s. Items of veterinary interest pp. 5 and 14. 900

The annual ANTHRAX vaccination campaign was conducted as usual and 547,000 sheep and goats were inoculated. This was 54,000 less than in the previous year on account of the losses among hill sheep during the severe winter. BLUETONGUE (stomatitis) vaccine was used in districts where the disease was found previously. Inoculation was not compulsory, but the response was good and 18,549 sheep were vaccinated.

NEWCASTLE DISEASE caused considerable losses and a vaccine prepared in Israel was used with good effect. This disease, not previously recognized in Cyprus, was diagnosed by the Ministry of Agriculture's laboratory at Weybridge. The vaccine seemed to give a protection up to three months.

PARASITIC DISEASES gave little trouble. FLY STRIKE by *Oestrus ovis* was investigated and was successfully treated by injection of a suspension of 15% tetrachlorethylene directly into the sinuses through the frontal bone. PHOS-

PHORUS DEFICIENCY was found amongst cattle after the long drought early in the year.

Samples of a batch of concentrated ANTHRAX spore vaccine, Onderstepoort avirulent strain 34F2 prepared in the spring of 1948 were tested in g. pigs at the end of 1949 and were found to have retained their potency. Similar results were obtained with samples sent to the South African Veterinary Laboratories and the batch will be used in 1950.

—D. S. RABAGLIATI.

U.S.A. (1948.) **Sixtieth Annual Report; Rhode Island Agricultural Experiment Station, Kingston, R.I.** pp. 72. Rhode Island State College. **901**

Comparative breeding systems amongst dairy cattle were studied. Part of the station's Holstein herd is being bred to selected inbred bulls from one cow family in the New Jersey herd. The other portion of the herd is being developed by using a succession of outcross (unrelated) sires that have some inbreeding in their pedigrees.

In a programme of MASTITIS control to find the prevalence of MASTITIS in the State and to evaluate management practices and treatments currently used, nine herd managers co-operated and tests were carried out comprising 1,072 samples of milk. The suggestions for good management as a preventive against MASTITIS are: (1) re-arrangement of the herd so that animals are grouped and milked in the following order: first calf heifers, non-infected, -mildly infected, and severely infected animals as indicated by periodic tests; (2) disposal of unprofitable animals and replacement with first calf heifers; (3) washing the udder and teats of each cow immediately before milking with warm chlorine solution and then drying; (4) disinfection of the teat-cups after milking each cow; (5) the practice of fast milking; (6) the provision of one man for each two-milking units; (7) early detection and proper treatment of all injuries to the udder and teats.

An attempt was made to find more economical and efficient poultry foods to supplement the usual rations by studying condensed fish solubles and their advantages appear to offset their disadvantages, but definite recommendations are to be withheld until the completion of further work now in progress.

In a study of INFECTIOUS BRONCHITIS and NEWCASTLE DISEASE it was observed in 1946 that INFECTIOUS BRONCHITIS virus of field origin, injected into the allantoic cavity, brought quicker adaptation of the virus to the embryos, so that they became dwarfed during the first passage.

A virus believed to be the same as the CHRONIC RESPIRATORY DISEASE virus reported in 1948 by this Station was isolated from material referred to the laboratory by the University of Massachusetts. This disease seems to be the same as that reported in 1946 by Komarov from Palestine. Serum from affected fowls of the field flock that recovered, as well as serum from laboratory fowls, failed to neutralize NEWCASTLE DISEASE virus. Laboratory fowls that recovered from INFECTIOUS BRONCHITIS were susceptible to the chronic respiratory infection; this demonstrates a definte difference between the viruses.

Sulphaquinoxaline was found to be a powerful drug against CAECAL AND INTESTINAL COCCIDIOSIS and it also proved effective in the treatment of FOWL CHOLERA. Sulphonamides are being increasngly used both prophylactically and therapeutically for farm animal diseases.—D. S. RABAGLIATI.

ALEGREN, A. Sweden. (1947.) Det civila veterinärväsendet år 1945. **[Sweden. Report of the Civil Veterinary Service for 1945.]** pp. 63. Stockholm: Kungl. Boktryckeriet. **902**

The Swedish civil veterinary service is one of seven bureaux under the "Medicinalstyrelse", or Medical Council, and the Veterinary Bureau has authority over all veterinary work. This is organized into four divisions—general, hygiene, tuberculosis and brucellosis. In 1945 there were 646 veterinarians in Sweden.

The animal health situation in each province is reviewed and accounts are presented on the more important diseases. Three foci of F. & M. DISEASE, all in Malmöhus, were detected during the year and all were successfully eliminated. ANTHRAX occurred in 13 herds. There were 71 cases of EQUINE INFECTIOUS ANAEMIA. Of 212,000 cattle tuberculin-tested for the first time, 13·5% reacted, and of 812,700 re-tested, only 0·9% reacted. 135 cows with UDDER TB. and 245 with GENITAL TB. were killed and compensation paid. Diagnostic work for BOVINE BRUCELLOSIS was done on a large scale and 55,000 animals were found to be infected.

The usual statistical information is given about meat and milk inspection, and also about the incidence of selected diseases in the provinces.—J. EDWARDS.

BOOK REVIEWS

NUNGESTER, W. J. [Sc.D., M.D.] & WILLIAMS, P. G. [B.A.] (1950.) **An illustrated study aid for medical bacteriology.** pp. 92. Ann Arbor, Michigan: Ulrich's. $2.00. **903**

The book is described as an experiment to determine the usefulness of diagrammatic sketches as an aid to study. Its greatest value lies in its easy application as a supplement to lectures and conventional textbooks. No claim is made that the book is complete in itself; in fact, reading it in the usual way, one is left with a confused view of the overall picture despite the comprehensive up-to-date treatment of each section.

The book is ring-bound to permit the pages to lie flat when opened. The method of printing allows plenty of space for annotation and a useful bibliography is appended to each section.—E. F. LEWIS.

FREI, W. (1950.) Tierseuchen. **[Infectious diseases of animals.]** pp. 317. München/Basel: Ernst Reinhardt. Unbound: Sw. fr. 8.80; Bound: Sw. fr. 11.-. **904**

This, like Leuthold's "Surgery" is one of the Reinhardt "Fundamentals of Veterinary Medicine" and is a complete and concise handbook of pocket size about infectious diseases of animals. The scope is wide and embraces diseases by bacteria, filtrable viruses, protozoa, fungi and other micro-organisms usually included in bacteriology. The layout is unusual: for instance the first three sections are devoted to virus septicaemias, bacterial septicaemias and blood diseases, infections not of generalized type being grouped according to body systems. However, every disease that one would expect to see dealt with is to be found somewhere, so the arrangement is of little importance.

Like most inter- and post-war veterinary and medical books of continental Europe, this one is not quite up to date in therapy and even the now old established penicillin is not featured as often as it ought to be. The sulphonamides and sulphone are not even mentioned as remedies for coccidiosis and dimidium is not mentioned in connexion with trypanosomiasis. However, apart from this aspect, the text is undoubtedly sound and the book a good and useful one which should become popular in the German-speaking veterinary colleges.

—J. EDWARDS.

BODDIE, G. F. [B.Sc. (Edin.), M.R.C.V.S., F.R.S.E. Professor of Medicine, Royal (Dick) Veterinary College, Edinburgh.] (1950.) **Diagnostic methods in veterinary medicine.** pp. viii + 389. Edinburgh & London: Oliver & Boyd. 3rd Edit. 20s. **905**

This third edition appears within six years of the first. There has been a general revision of the text and additions which increase the usefulness of this well-known book have been made to the chapters dealing with allergic reactions, clinical biochemistry, clinical bacteriology and clinical haematology. The diseases are dealt with as they affect the various organ systems and only those which occur in Great Britain are considered. Such diseases as rinderpest, trypanosomiasis and so on are not mentioned. There is a useful index, but it was rather unexpected, especially in a book coming from Scotland, not to find any reference to grass sickness in horses. Information on this interesting and important disease is not readily available in the textbooks and it would be useful if its diagnosis and differential diagnosis could be included.—M.C.

PFLUGFELDER, O. (1950.) Zooparasiten und die Reaktionen ihrer Wirtstiere. **[Animal parasites and reactions of their hosts.]** pp. viii + 198. Jena: Gustav Fischer. DM. 12.—. **906**

This work is divided into two parts, a systematic and a general section. In the systematic part the author deals comprehensively with cellular and tissue reactions of the body to trypanosomes and the various immunity responses evoked by tnem. In addition he also discusses the tissue reactions produced by *Leishmania* spp., and other parasitic flagellates, *Entamoeba histolytica,* gregarines, coccidia, plasmodia, piroplasms, sarcosporidia and a number of protozoa of purely academic interest to the veterinary reader. A short discussion is included concerning the evidence for the theory that protozoa are a cause of cancer.

The trematodes are dealt with. In the part on cestodes, the tissue responses, blood picture and serological reactions associated with echinococcus infection are of greatest interest, whilst the pathology of infestations with *Moniezia* (which is incorrectly spelt in the text and index), *Hymenolepis, Taenia taeniaeformis, T. solium, Multiceps* spp. is also included. Immunity manifestations against a large number of nematodes are discussed, most information being given with regard to trichinosis.

The host reactions to certain arthropod infestations are described.

The second section comprises a general dis-

cussion of cellular reactions, including the hypertrophy of infected cells, phagocytosis, inflammatory reactions, capsule formation and various humoral reactions such as the process of immunization, formation of antibodies, local immunity, age immunity, and the strength and duration of immunity.

An extensive list of references is included and also a number of very clear drawings and photomicrographs.—M. L. CLARKE.

BURN, J. H. [Professor of Pharmacology in the University of Oxford.], FINNEY, D. J. [Lecturer in the Design and Analysis of Scientific Experiment in the University of Oxford.] & GOODWIN, L. G. [Member of the Staff of the Wellcome Laboratories of Tropical Medicine.] (1950.) **Biological standardization.** pp. x+440. London, New York & Toronto: Geoffrey Cumberlege, Oxford University Press. 2nd Edit. 35s. **907**

The appearance of a second edition of this valuable book will be of great interest to veterinarians and to all workers engaged in pharmacology, chemotherapy, biochemistry and allied sciences. The book comprises 25 chapters and the author, while preserving the continuity of the original edition, has included expert contributions by Finney in chapter three on the statistical side of standardization, which has expanded so rapidly, and by Goodwin in the field of chemotherapy in chapters 21–25, who has made important additions to the knowledge of methods of testing. Also in the methods used for anterior pituitary hormones and the sex hormones the author included those used by Gaddum.

The subject matter deals with (1) units of measurement; (2) the classification of methods; (3) statistical analysis; (4) pituitary (posterior lobe) extract; (5) insulin; (6) the hormones of the suprarenal gland; (7) thyroid; (8) para thyroid extract; (9) the ovarian hormones; (10) male hormones; (11) anterior lobe of the pituitary gland; (12) vitamin D ;(13) digitalis, strophanthus and squill; (14) antipyretics and analgesics; (15) atropine substitutes; (16) local anaesthetics; (17) gastric secretion; (18) secretin and pancreozymin; (19) quinidine substitute; (20) curare-like compounds; (21) anthelmintic substances, against filariae, schistosomes, cestodes; (22) trypanocidal substances; (23) amoebicidal substances; (24) leishmanicidal substances; and (25) antimalarial substances.

The author discusses the introduction of standards in the form of dry and stable preparations which make comparative methods possible. Of these there are now 39, kept either in the Serum Institute in Copenhagen or in the National Institute for Medical Research in London.

In the choice of a method of standardization the author emphasizes the need not only of accuracy, but also of speed and a simplicity of technique.

The chapter on statistical analysis (pp. 26–176) is aimed to give readers a general impression of the principles of statistical science in relation to standardization, and for those who are more deeply interested, Finney has tried to give in non-mathematical terms, an account of elementary statistical methods sufficiently detailed for the reader to learn to apply them while remaining aware of his own limitations. On pp. 172–175 there is a useful summary of the standardized algebraic notation used in this chapter.

In regard to a possible criticism that certain methods have been omitted as for example, the standardization of heparin, the author explains that he has dealt only with methods of which he has first-hand knowledge.

There are eight appendixes and a comprehensive index. The book is well bound and the printing and paper are excellent.—E.M.J.

NEWBURGH, L. H. [M.D. Professor of Clinical Investigation, The Medical School, University of Michigan. Edited by.] (1949.) **Physiology of heat regulation and the science of clothing.** pp. viii+457. Philadelphia & London: W. B. Saunders Co. 37s. 6d. **908**

During the Second World War it became essential to have a better knowledge of the effect of climatic conditions on the human body, particularly with regard to extremes of heat and cold and the most serviceable garments to afford protection. For this reason, a team of workers were given different problems for intensive study and this book consists of a collection of 12 papers by the various authorities concerned.

Consideration is given to the adaptation of primitive peoples to their surroundings and heat production and regulation of body temperature are discussed. The physiological adjustments to heat and cold, regional heat loss and indices based on thermal acceptance ratios are dealt with. A detailed account of the properties of the various materials used for clothing, together with an account of the laboratory and field experiments used to test their value is given and the most suitable clothing for various climates is described.

Whilst much of the material in this book is solely concerned with the human subject, it

should be studied by veterinary workers interested in the effects of climate on animals, for a clear picture is given of the physiological reactions accompanying climatic changes. This is of considerable importance when considering the movement of domestic animals to a climate which differs from that to which they are accustomed.—J. A. NICHOLSON.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review.]

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